

**Southwestern Willow
Flycatcher and Yellow-billed
Cuckoo Surveys along the
Las Vegas Wash,
Clark County, Nevada, 2018**



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Surveys along Las Vegas Wash, Clark County, Nevada, 2018**

**SOUTHERN NEVADA WATER AUTHORITY
Las Vegas Wash Project Coordination Team**

Prepared for:

**U.S. Fish and Wildlife Service
Southern Nevada Field Office**

and

Las Vegas Wash Coordination Committee

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ABSTRACT

The Las Vegas Wash Coordination Committee (LVWCC), a 28-member stakeholder group, is working to stabilize and enhance the Las Vegas Wash (Wash), the channel that drains flows from the Las Vegas Valley to Lake Mead at Las Vegas Bay. The Wash also flows through the 2,900-acre Clark County Wetlands Park (Wetlands Park). As part of informal Section 7 consultation for the project with the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service (USFWS) recommended conducting annual surveys to determine the occurrence of the federally endangered southwestern willow flycatcher (*Empidonax traillii extimus*) within the Wetlands Park. These surveys have been conducted since 1998. Following the listing of the yellow-billed cuckoo (*Coccyzus americanus*) as threatened and reinitiation of consultation, USFWS recommended conducting annual surveys for that species, as well. Cuckoo surveys have been conducted annually since 2013. This report describes 2018 survey results for both species.

Surveys were conducted using standard protocols. Survey effort for the flycatcher decreased in 2018 from the five-survey protocol for projects to the general three-survey protocol. Surveys for the flycatcher began May 23 and concluded June 28; one migrant willow flycatcher was detected during the second survey period. 2018 surveys for the cuckoo began June 25 and were completed August 9; no cuckoos were detected. For the flycatcher, this was the lowest number of detections since 2010 and represents the fourth consecutive year of declines. The decrease in the number of migrants detected may be related to survey timing and reduced survey effort. However, the decline may also be attributable at least in part to habitat losses that have occurred in recent years. For cuckoos, this was the second year since 2013 that there have been no detections, and the number of detections in Nevada is typically low. Habitat extent and quality declined for both species in the study area, but completion of the final weir projects should provide opportunities to reverse this trend.

Annual surveys for southwestern willow flycatchers and yellow-billed cuckoos should continue in order to comply with informal Section 7 consultation measures.

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1.0 BACKGROUND

The Las Vegas Wash (Wash) is the primary drainage channel for the Las Vegas Valley carrying highly treated wastewater, urban runoff, shallow groundwater, and storm runoff into Lake Mead at Las Vegas Bay (Figure 1). Although originally an ephemeral stream, the Wash began supporting perennial flows in the 1950s when the discharge of treated wastewater into the channel was initiated. At first these perennial flows created a lush wetland along the channel. However, the volume of flows in the Wash continued to increase with the increasing urban population, and erosion from the increased flow and from storm events began to drain the wetlands and carry thousands of tons of sediment to Lake Mead. By the late 1990s, headcutting had deeply incised the channel and reduced the wetlands by approximately 90% from their peak extent, leaving less than 200 acres.

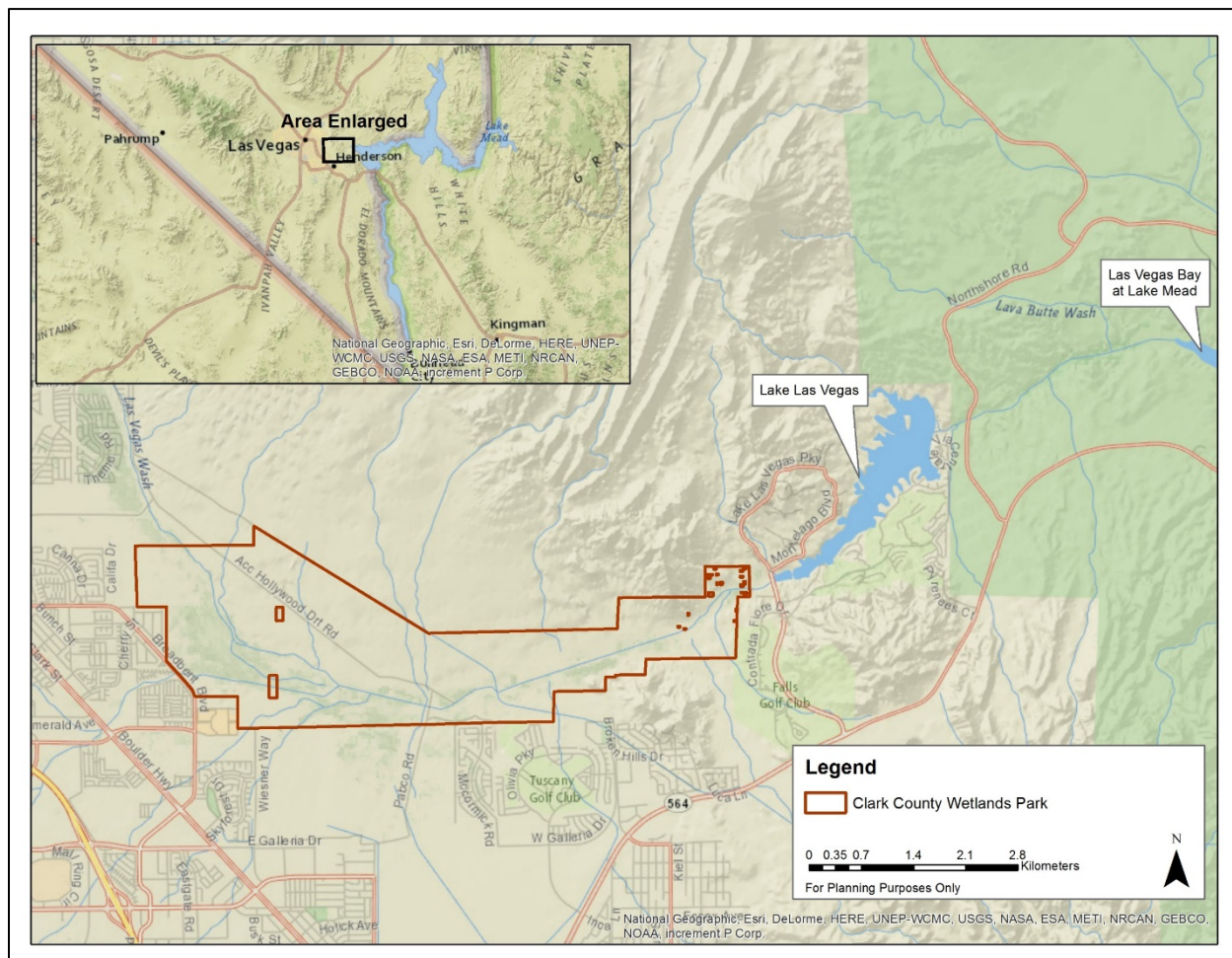


Figure 1. Las Vegas Wash location and general study area map.

In 1998, the Las Vegas Wash Coordination Committee (LVWCC), a 28-member stakeholder group, was created to address the degradation of the Wash. The group developed and is implementing the Las Vegas Wash Comprehensive Adaptive Management Plan to stabilize the Wash and restore its ecological functions. Stabilization and enhancement activities, which include the construction of 21 erosion control structures (weirs) and extensive revegetation, help deter erosion and reduce the amount of sediment being deposited in Lake Mead. As of May 2018, 20

permanent weirs and more than 200 hectares (>500 acres) of native vegetation were in place. After a delay of nearly two years, the final weir projects, construction of Sunrise Mountain Weir and a major expansion of Historic Lateral Weir, were initiated (Figure 2). The completion of these projects in the fall of 2018 brings the number of completed weirs to 21 and represents the end of capital construction. Revegetation of the final weir sites should be completed by 2020.

Weir construction has impacted habitat at the Wash. Vegetation was cleared from each site to allow for vehicle access and for the footprint of the weir itself. Especially in the early years of the project, much of the vegetation present at each site was non-native tamarisk (*Tamarix ramosissima*). Once construction was complete, revegetation with native wetland, riparian, and upland plants occurred, with plant selection dictated by site conditions. The Wash flows through the 2,900-acre Clark County Wetlands Park (Wetlands Park), and Clark County is also removing tamarisk and planting mesquite trees and riparian and wetland vegetation within the study area as it develops park facilities.

The southwestern willow flycatcher (*Empidonax traillii extimus*) is a small songbird that breeds in riparian habitat in the Southwest and is a federally endangered subspecies of the willow flycatcher. It historically preferred dense willow (*Salix* spp.) habitat throughout its range, but as this habitat declined in the twentieth century, the southwestern willow flycatcher adapted to the non-native tamarisk that had largely replaced its preferred habitat.

In 2000, the U.S. Army Corps of Engineers initiated informal Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) on the proposed development of the park and associated erosion control structures to ensure compliance with the Endangered Species Act (ESA). The USFWS concurred that the project may affect but was unlikely to adversely affect the flycatcher and recommended that annual surveys continue to be conducted to determine its occurrence in the project area. These surveys were conducted by permitted consultants from 1998 through 2009, first contracted by Clark County and then by the Southern Nevada Water Authority (SNWA), the lead agency of the LVWCC (Southwest Wetlands Consortium 1998; SWCA 1999, 2000, 2001, 2002, 2003, 2005, 2006, 2007, 2008, 2009a, 2009b). Permitted staff from the Las Vegas Wash Project Coordination Team (Wash Team; the implementation arm of the LVWCC) have performed the surveys since 2010 (Van Dooremolen 2010, 2011, 2012, 2014a, 2014b, 2015a, 2016a, 2018).

The yellow-billed cuckoo (*Coccyzus americanus*) is a neotropical migrant that breeds extensively throughout eastern North America, from Mexico north to Canada, but has a much more limited breeding distribution in the western portion of the continent. The USFWS listed the western Distinct Population Segment as threatened under the ESA on November 3, 2014. In the Southwest, the cuckoo prefers expansive riparian woodlands with cottonwood, willow, and mesquite for nesting. Thus, the cuckoo may benefit from revegetation efforts associated with the Wash project and Wetlands Park.

A yellow-billed cuckoo was detected during the 1998 southwestern willow flycatcher surveys (Southwest Wetlands Consortium 1998). San Bernardino County Museum examined potential cuckoo habitat in the study area in 2000 and 2001, found it lacking, and did not conduct surveys for the species (McKernan and Braden 2001, McKernan and Carter 2002). From 2002 through 2004, surveys for the cuckoo were conducted; none were found and since habitat was still

suboptimal, surveys were discontinued (SWCA 2002, 2003, 2005). In 2013, the Wash Team began conducting annual cuckoo surveys again (Van Dooremolen 2014c, 2014d, 2015b, 2016b, 2017). Following the listing of the species, the U.S. Bureau of Reclamation reinitiated informal Section 7 consultation. The USFWS concurred that the project may affect but was unlikely to adversely affect the yellow-billed cuckoo and recommended that annual surveys continue to be conducted to determine its occurrence in the project area.

This document reports the results from the 2018 surveys for southwestern willow flycatchers and yellow-billed cuckoos in potentially suitable nesting habitat along the Wash.

2.0 METHODS

2.1 Potentially Suitable Nesting Habitat

2.1.1 Southwestern Willow Flycatcher

Potentially suitable nesting habitat for the southwestern willow flycatcher is defined as areas with dense to moderately dense riparian vegetation, either bordering or containing surface water or saturated soils. Native riparian species include Goodding willow (*S. gooddingii*), sandbar willow (a.k.a. coyote willow; *S. exigua*), cottonwood (*Populus fremontii*), seep willow (*Baccharis salicifolia*) and willow baccharis (*B. salicina*). Tamarisk is the dominant non-native species, although little remains along the Wash. Small patch sizes, less than a hectare (2.5 acres), are included.

2.1.2 Yellow-billed Cuckoo

Potentially suitable nesting habitat for the yellow-billed cuckoo is defined as patches of native riparian vegetation with at least some large overstory trees, such as cottonwood and Goodding willow, and an understory layer, typically with sandbar willow, seep willow, and/or willow baccharis. Screwbean and honey mesquite (*Prosopis pubescens* and *P. glandulosa*) thickets of suitable stature are also included. No monotypic stands of tamarisk were surveyed as the species typically does not nest in them (Halterman et al. 2016). Patch size is also important. Halterman et al. (2016) recommend a minimum patch size for surveying of five hectares (12 acres) but state that yellow-billed cuckoos rarely nest in patches smaller than 20 hectares (~50 acres).

2.2 Study Area

The general study area consists of the Wetlands Park and an approximately six-mile reach of the Wash contained within its boundaries. Three survey sites were identified in the study area: the Wetlands Park Nature Preserve (Nature Preserve), the Wash and Duck Creek.

2.2.1 Nature Preserve

The Nature Preserve (Figure 2) is the developed heart of the Wetlands Park, with paved and unpaved trails. Native-dominated riparian habitat rings constructed wetland ponds, which include the upper pond, three middle ponds, and Vern's Pond. It also lines the channels that run between them. Emergent vegetation – cattails (*Typha domingensis*), common reed (*Phragmites australis*), and bulrush (*Schoenoplectus* spp.) – occurs in the wetter portions of the understory. The densest and widest riparian patches occur along the channels; the density and width of the habitat ringing

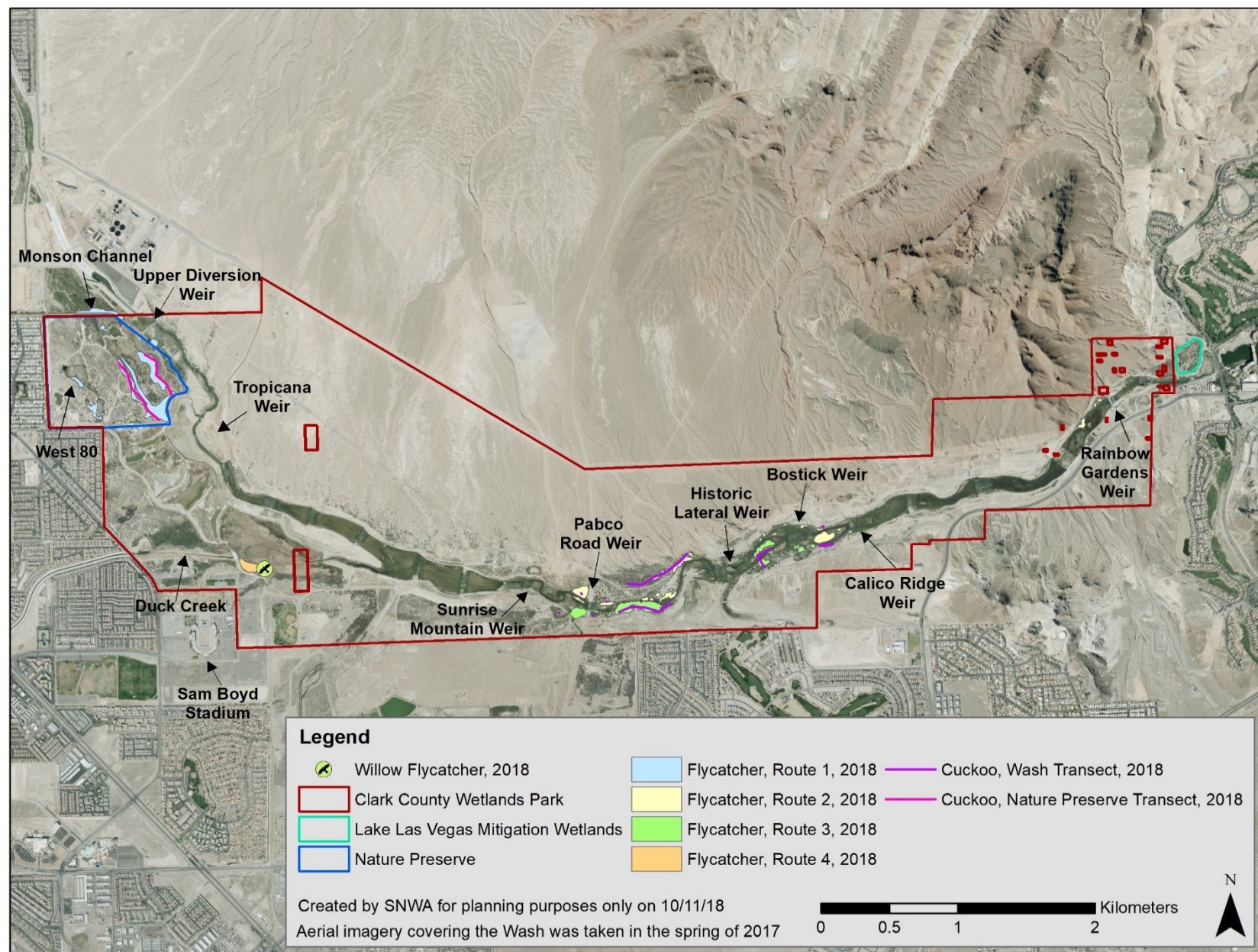


Figure 2. Willow flycatcher survey routes, yellow-billed cuckoo survey transects and 2018 willow flycatcher detection location.

the ponds themselves is generally thinner. A grove of cottonwoods just south of the middle ponds transitions to an overstory of Goodding willows with a few cottonwoods interspersed and a dense understory of sandbar willow and willow baccharis. The patches of riparian habitat are connected by patches of honey and screwbean mesquite. Both species of mesquite occur either with quailbush (*Atriplex lentiformis*) and willow baccharis in the understory or in thickets. Mesquite trees of various maturity with a saltgrass (*Distichlis spicata*) understory cover the site west of the main survey area to the West 80. In the West 80, which was constructed several years after the area to the east, the riparian zone along the feeder channels and ponds is generally much thinner than in the older portions of the Nature Preserve, limiting its potential suitability to southwestern willow flycatcher. A portion of Monson Channel bordering the preserve is also included in this site, as are small patches upstream and downstream of Upper Diversion Weir. Vegetation on Monson Channel is dominated by tamarisk, and there is one small patch of tamarisk adjacent to Vern's Pond. These areas are only potentially suitable for the flycatcher.

In 2018, approximately eight hectares (~20 acres) of potentially suitable habitat were surveyed for the southwestern willow flycatcher and approximately 16 hectares (~40 acres) were surveyed for the yellow-billed cuckoo, with one route for the flycatcher (Route 1) and two transects for the cuckoo.

2.2.2 Wash

Potentially suitable habitat along the Wash begins just upstream of Pabco Road Weir and continues downstream to Calico Ridge Weir for the cuckoo and to Rainbow Gardens Weir for the flycatcher (Figure 2). The LVWCC has constructed several weirs along the Wash and significant revegetation has occurred and matured. Stringers of native riparian habitat run along either side of the channel, consisting of cottonwood, Goodding and sandbar willows, and some seep willow and willow baccharis. Cattails, common reed, and to a lesser extent bulrush occur in the wetter portions of the understory, and patches of mesquite, both screwbean and honey (often with quailbush or baccharis in the understory) connect the riparian habitat. Little tamarisk remains. The majority of the habitat is concentrated from just upstream of Pabco Road Weir to upstream of Calico Ridge Weir (Figure 2). Habitat further downstream is limited to a few small patches above Rainbow Gardens Weir that only have potential for flycatcher (Figure 2).

In 2018, field crews surveyed just over nine hectares (~22 acres) of potentially suitable habitat for the southwestern willow flycatcher and approximately 19 hectares (~47 acres) for the yellow-billed cuckoo, with two routes for the flycatcher (Routes 2 and 3) and two transects for the cuckoo, covering both the north and south banks.

2.2.3 Duck Creek

This site includes patches of tamarisk along Duck Creek near Sam Boyd Stadium (Figure 2). In 2018, field crews surveyed less than 1.5 hectares (~3 acres) of potentially suitable habitat for southwestern willow flycatcher with a single route (Route 4).

2.3 Surveys

2.3.1 Southwestern Willow Flycatcher

Surveys for the flycatcher were conducted using the presence/absence protocol developed by Sogge et al. (2010). Each route was surveyed by a team of 2-3 people. Each team was composed of a minimum of one of the following permitted individuals: Deborah Van Dooremolen (TE148556-3), Nicholas Rice (TE64580A-2), or Timothy Ricks (TE67397A-2). The three-survey general protocol was used, which includes one survey in each of three survey periods (May 15-31, June 1-24, and June 25-July 17). The 2018 surveys were conducted May 23-24, June 5 and 7, and June 27-28. In prior years, surveys were conducted using the five-survey project-related protocol. USFWS approved the change in survey effort in April of 2018 (08ENVS00-2018-I-0102 and 1-5-01-I-428.AMDI).

The southwestern subspecies is the only willow flycatcher that nests in southern Nevada. However, other non-listed subspecies of the willow flycatcher may pass through the area during migration, and the different subspecies are virtually indistinguishable in the field. Birds discovered during the first and second survey periods may simply be migrating through and cannot be determined to be of the federally endangered subspecies. The third survey period (June 25-July 17) begins after the known migration period, so any willow flycatchers detected then can be considered residents, and thus of the southwestern subspecies (Sogge et al. 2010).

Field crews began surveys in the hour before sunrise and were typically finished by 10:30 a.m. (Appendix A). Call-playback was used to elicit responses from any nearby willow flycatchers. Surveyors broadcast the species' song (fitz-bew) and calls with MP3 players attached to portable speakers. They walked through potentially suitable nesting habitat broadcasting the vocalizations approximately every 20-30 meters (~65-100 feet) following a period of silent listening. Vocalizations were broadcast for approximately 15 seconds at each stop, followed by 1-2 minutes of listening for a response. If a bird was detected, the surveyors would travel a minimum of 50 meters (~165 feet) to prevent the individual from being double-counted. Broadcasts were conducted from inside habitat patches where possible but occasionally had to occur from the habitat edge due to concerns regarding safe access.

2.3.2 Yellow-billed Cuckoo

Presence/absence surveys for the cuckoo were conducted using the protocol drafted by Halterman et al. (2016). The protocol identifies three survey periods from mid-June through mid-August and requires four surveys across those periods, with one survey in the first period (June 15-30), two surveys in the second (July 1-31), and one survey in the third (August 1-15). The 2018 surveys were conducted June 25-26, July 9-10, July 24-25, and August 9. Each survey was separated by 14-16 days (the draft protocol specifies a range of 12-15 days, but rain delayed one survey). Each transect was surveyed by a team of 2-3 people, and the team had a minimum of one of the previously listed permitted individuals.

Surveys began at sunrise and were completed by 11:00 a.m. or when the temperature reached 40° C (104° F), whichever came first. Call-playback was used. Within each transect, broadcasts were conducted every 100 meters (328 feet); points on adjacent transects were likewise separated to prevent double counting. At each broadcast point, the survey team would listen quietly for approximately one minute, and then, if no cuckoos were heard, they would broadcast five of the

species' contact calls (the kowlp call), with each call separated by one minute, using an MP3 player attached to a portable speaker. If a bird was detected, the surveyors would skip the next two calling stations to prevent the individual from following the broadcast and being counted more than once.

The protocol established a method for determining the breeding implications of survey results. Two detections in an area in two different survey periods separated by at least ten days is a possible breeding territory. Three detections in an area in three different survey periods separated by at least 10 days is a probable breeding territory. Field staff has to observe copulation, stick carry to nest, carrying food (multiple observations), distraction display(s), the nest, or fledgling(s) to confirm breeding.

3.0 RESULTS

3.1 Surveys

3.1.1 Southwestern Willow Flycatcher

One migrant willow flycatcher was detected during the second survey period at the Duck Creek site (Route 4; Figure 2). The bird was in tamarisk. It responded to the broadcast and sang several times before falling quiet; it was not detected again. Survey datasheets are provided in Appendix A.

3.1.2 Yellow-billed Cuckoo

No cuckoos were detected. Survey datasheets are provided in Appendix B.

3.2 Habitat Observations

3.2.1 Southwestern Willow Flycatcher

3.2.1.1 Nature Preserve

Overall, habitat extent remained the same as in 2017 as small changes across the site increased the size of some patches while decreasing the size of or removing others. Habitat quality declined and is now just fair. Native riparian trees continued to show signs of stress and die-off, particularly around Vern's Pond and the middle ponds. Fire continued to impact the site, burning more than 10 acres in February. Most of the vegetation impacted was common reed; less than 0.5 hectares (~1 acre) of native and non-native riparian habitat was damaged. Riparian trees and shrubs in the few acres that burned in March 2014 continued their regrowth. The tamarisk experienced varying levels of defoliation by the northern tamarisk beetle (*Diorhabda carinulata*); the small stand adjacent to Vern's Pond was dry, brown and not included as habitat, while the stringer along Monson Channel was greener throughout than in 2017 and was surveyed. Conversely to the older areas of the Nature Preserve, riparian habitat in the West 80 appeared healthier this year than in the past few years.

3.2.1.2 Wash

Habitat extent declined from the prior year. Quality declined as well and was generally just fair across the site. Riparian vegetation originally cleared in 2015, was re-cleared for the construction of the Sunrise Mountain Weir and expansion of the Historic Lateral Weir (Figure 2), which was

ongoing over the course of the survey season. Habitat on the south bank upstream of Pabco Road Weir (previously part of Route 4, which is now confined to Duck Creek) was limited this year. The Upstream Pabco South Upper Plateau revegetation site was not surveyed for flycatcher in 2018. It is dominated by mesquites, offers little to no understory, and the few riparian trees showed further signs of mortality (the site was surveyed for cuckoo). This constricts habitat upstream of the weir to just one small patch on the north bank and one small patch on the south bank. A small fire burned some Goodding willows in the Historic Lateral North revegetation site. Riparian trees in some areas started to show signs of die-off. Potentially suitable nesting habitat downstream of Calico Ridge Weir (Figure 2) has been limited for several years now. The Lake Las Vegas mitigation wetlands, which largely dried out over the course of the 2016 season, had still not recovered and were not surveyed in 2018.

3.2.1.3 Duck Creek

Habitat extent declined, and quality continued to be poor. Fires in November 2017 and in May 2018 damaged habitat. The November fire burned dozens of acres, predominantly of common reed, adjacent to the tamarisk stand to the northeast of Sam Boyd Stadium (Figure 2). Additionally, while green and wet enough at the beginning of the season to merit surveying, habitat quality degraded throughout the season as the stand was defoliated by the northern tamarisk beetle. Despite these challenges, this was where the only willow flycatcher was detected. The May fire burned the large stand to the north of Sam Boyd stadium, including the few acres traditionally surveyed, leaving no habitat during the season.

3.2.2 Yellow-billed Cuckoo

3.2.2.1 Nature Preserve

Habitat extent and quality (fair) were similar to last year but as stated under Section 3.2.1.1 fire continued to impact the site and native riparian trees continued to show signs of stress and die-off. A Wash Team biologist identified *Phleospora prosopidis*, a fungal pathogen, as what has been causing stress and leaf curl in screwbean mesquites over the past few years (Jason Eckberg, pers. comm.), although the trees seemed less impacted than in prior years.

Potential prey items were not heard or seen in any abundance, but this may be related, at least in part, to survey timing. Surveys conclude earlier at the Nature Preserve site as less habitat is covered. At the Wash, Apache cicada (*Diceroprocta apache*) activity increases as the morning progresses.

3.2.2.2 Wash

Habitat extent declined slightly, and quality declined to just fair. As stated in Section 3.2.1.2, habitat originally cleared in 2015 was re-cleared for weir construction, and this increased fragmentation of potentially suitable nesting habitat. Construction occurred for the duration of the survey season. The small fire that burned some Goodding willows in the Historic Lateral North site occurred in the footprint of the 2017 territory (Figure 2). Riparian trees in some areas started to show signs of stress. Mesquite-dominated revegetation sites continued to mature, improving their potential suitability for cuckoo.

Potential prey items were typically present in good numbers and included Apache cicadas, green bird grasshoppers (*Schistocerca shoshone*), field crickets (*Gryllus* spp.) and others.

4.0 DISCUSSION AND RECOMMENDATIONS

4.1 Southwestern Willow Flycatcher Discussion

Migrant willow flycatchers declined to just one in 2018. This is the lowest number of detections since 2010 (Figure 3). It also represents the fourth consecutive year of declines. As stated in Van Dooremolen (2018), this continued reduction in numbers relative to the 2011-2014 period may be timing related. SWCA (2009b) stated that fluctuations in numbers from one year to the next may be due in part to the timing of surveys relative to the timing of migration. Three of the four years in the 2011-2014 period detected migratory waves of willow flycatchers, resulting in detections that were substantially higher than any other period in the 20 years. Surveys in recent years may have missed these waves. However, it remains unknown whether such waves are an annual occurrence or are more rare and related to climatic events or other forces (SWCA 2009b). The reduction in survey effort from five to three surveys may also have caused fewer willow flycatchers to be detected in 2018.

While survey timing and effort may impact the number of willow flycatchers detected, the continued decline noted from 2015 onward may also be attributable at least in part to habitat losses that have occurred both within and adjacent to the study area in recent years (Van Dooremolen 2015, 2016). Habitat extent was just over 18 hectares (~45 acres), the lowest since surveys began. Looking ahead to the future, completion of the final weir projects should provide opportunities to reverse the trend of declining habitat and increase the extent and quality of native riparian habitat available along the Wash.

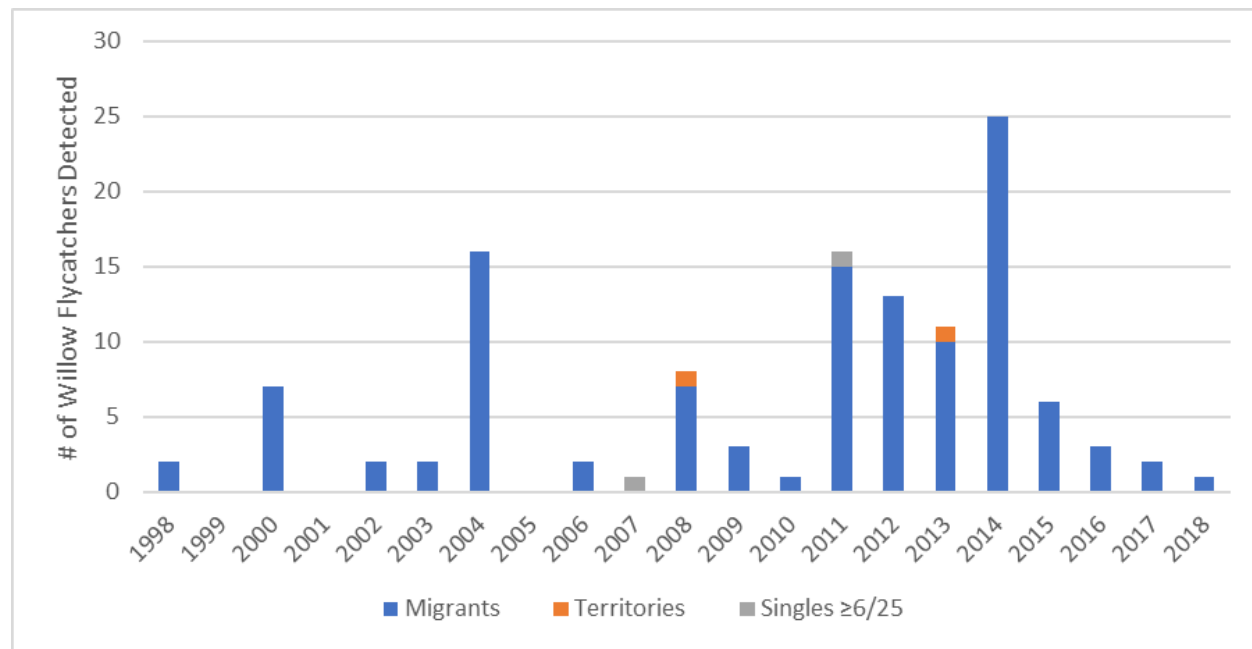


Figure 3. The number of willow flycatchers detected annually, 1998-2018. Birds on territory and single detections in the third survey period (≥ June 25) were assumed to be resident and thus confirmed to be of the endangered southwestern subspecies.

Although southwestern willow flycatchers nest in both tamarisk and native-dominated riparian habitats if the conditions are right, tamarisk-dominated habitat in the Colorado River watershed has been impacted by the spread of tamarisk leaf beetles (*Diorhabda* spp.). The northern tamarisk beetle has been present in the study area for several years now, causing varying levels of defoliation but given how little tamarisk remains, the beetle has not had a significant impact on potentially suitable nesting habitat. If beetle-caused habitat impacts continue in the Colorado River watershed, the Wash's status as native-dominated may increase its potential to host nesting birds, especially if gains can be made in habitat in upcoming years.

More than 20 years of surveys have shown that the Wash is mostly used by migrating willow flycatchers. Of the 121 individuals detected from 1998 through 2018, 117 (96.7%) were migrants. Just four were considered residents, only two of which established territories, and neither male was confirmed to pair or nest. Reproductive success has a large influence on site fidelity with flycatchers. Individuals that successfully fledge young at a location are more likely to return there and unsuccessful birds that move to a new site the next year typically improve their success (Paxton et al. 2007). Since the males were unsuccessful in their attempts to nest at the Wash, it is not surprising that they did not return. Also, the Wash is approximately 40 miles from the nearest nesting colony, at Overton, Nevada. This may be a larger barrier to colonization than previously thought, even though the Wash's 2008 resident southwestern willow flycatcher was re-sighted there in 2009 (McCleod and Koronkiewicz 2010). The colony there is small, with just a few territories in recent years. This makes it more difficult for colonization of the Wash to occur than if it was closer to a colony and that colony was large (M. McLeod pers. comm.).

Also, as in previous years, it should be noted that brown-headed cowbirds are among the most common birds in the study area during the breeding season. The species is a known brood parasite of the southwestern willow flycatcher and can negatively impact nest success, "especially at small and isolated breeding sites" (Sogge et al. 2010).

4.2 Yellow-billed Cuckoo Discussion

No yellow-billed cuckoos were detected in 2018, just the second year with no detections since surveys recommenced (Figure 4). As in prior years, context should be given to these results. Annually, few cuckoos are detected in the state. In the 2018 field season, in southern Nevada, an individual was detected once during protocol surveys at the Overton Wildlife Management Area (D. Van Dooremolen pers. obs.); a cuckoo was identified on three protocol surveys (representing a probable breeding territory) at the Warm Springs Natural Area (N. Rice pers. comm.); a cuckoo was detected once during protocol surveys on the Virgin River near Mesquite (A. Pellegrini pers. comm.); and an individual was detected during protocol surveys and incidentally at the Bunkerville/Electric Ave. Pond site (C. Klinger pers. comm.). One cuckoo was identified during protocol surveys in northern Nevada at the Lahontan State Recreation Area (C. Klinger pers. comm.), and an individual was incidentally detected at Rafter 7 Ranch (M. Enders pers. comm.).

Given the limited extent and quality of potentially suitable nesting habitat, the Nature Preserve and Wash can likely, at best, support just a few pairs of nesting cuckoos. Breeding has been indicated for the species, with probable territories at the Nature Preserve in 2013 and at the Wash in 2017 (Figure 4).

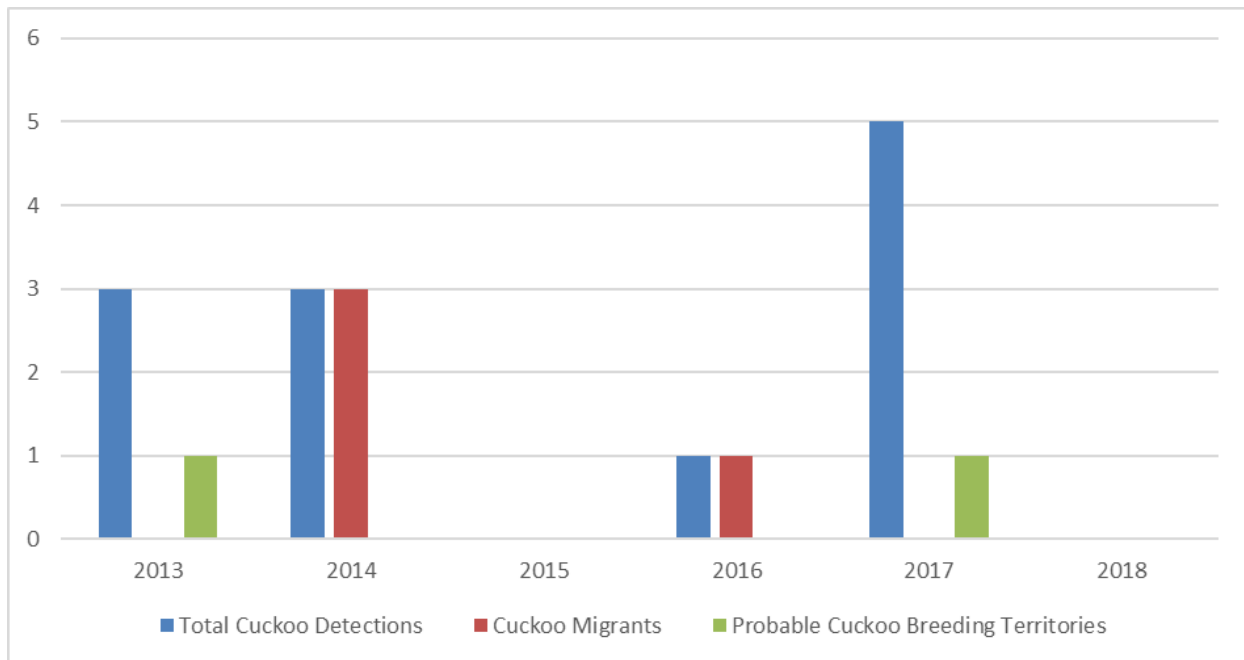


Figure 4. Yellow-billed cuckoo survey detections, 2013-2018.

4.3 Recommendations

Annual surveys for southwestern willow flycatchers and yellow-billed cuckoos should continue in order to determine the occurrence of these species within the study area and comply with informal Section 7 consultation measures.

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Appendix A

Southwestern Willow Flycatcher Survey Datasheets

Willow Flycatcher (WIFL) Survey and Detection Form (revised April, 2010)

Site Name: Las Vegas Wash, Route 1 (Nature Preserve) State: NV County: Clark
 USGS Quad Name: _____ Elevation: 496 (meters)
 Creek, River, or Lake Name: Las Vegas Wash

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)?

Yes X No _____

Survey Coordinates: Start: E 678148 N 3997000 UTM Datum: NAD83 (See instructions)
 Stop: E 677734 N 3997012 UTM Zone: 11N

If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

****Fill in additional site information on back of this page****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey Time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, <i>Diorhabda</i> spp.]). If <i>Diorhabda</i> found, contact USFWS and State WIFL coordinator.	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s): Timothy Ricks & Victoria Wuest	Date:	0	0	0	N					
	Start:									
	Stop:									
	Total hrs:									
Survey # 2 Observer(s): Timothy Ricks & Victoria Wuest	Date:	0	0	0	N					
	Start:									
	Stop:									
	Total hrs:									
Survey # 3 Observer(s): Timothy Ricks & Victoria Wuest	Date:	0	0	0	N					
	Start:									
	Stop:									
	Total hrs:									
Survey # 4 Observer(s): N/A	Date:									
	Start:									
	Stop:									
	Total hrs:									
Survey # 5 Observer(s): N/A	Date:									
	Start:									
	Stop:									
	Total hrs:									
Overall Site Summary <small>Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals.</small>		Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any WIFLs color-banded? Yes _____ No _____ Unknown _____ If yes, report color combination(s) in the comments section on back of form and report to USFWS.				
Total survey hrs:	10.7	0	0	0	0					

Reporting Individual: Deborah Van Dooremolen Date Report Completed: 10/15/2018
 US Fish & Wildlife Service Permit #: TE148556-3 State Wildlife Agency Permit #: n/a

Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Deborah Van Dooremolen Phone # 702-822-3370
 Affiliation Southern Nevada Water Authority E-mail debbie.vandooremolen@snwa.com
 Site Name Las Vegas Wash, Route 1 Date report Completed 10/15/2018
 Was this site surveyed in a previous year? Yes X No Unknown
 Did you verify that this site name is consistent with that used in previous yrs? Yes X No Not Applicable
 If name is different, what name(s) was used in the past?
 If site was surveyed last year, did you survey the same general area this year? Yes X No If no, summarize below.
 Did you survey the same general area during each visit to this site this year? Yes X No If no, summarize below.
 Management Authority for Survey Area: Federal Municipal/County X State Tribal Private
 Name of Management Entity or Owner (e.g., Tonto National Forest) Clark County

Length of area surveyed: 2.0 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

 Native broadleaf plants (entirely or almost entirely, > 90% native)
X Mixed native and exotic plants (mostly native, 50 - 90% native)
 Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)
 Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific name.

Salix spp. (gooddingii & exigua), Populus fremontii

Average height of canopy (Do not include a range): 5 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections;
 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests;
 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features).
Attach additional sheets if necessary.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary

Willow Flycatcher (WIFL) Survey and Detection Form (revised April, 2010)

Site Name: Las Vegas Wash, Route 2 (North Bank) State: NV County: Clark

USGS Quad Name: _____ Elevation: 467 (meters)

Creek, River, or Lake Name: Las Vegas Wash

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)?

Yes X No _____

Survey Coordinates: Start: E 681269 N 3995676 UTM Datum: NAD83 (See instructions)

Stop: E 685051 N 3997084 UTM Zone: 11N

If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

****Fill in additional site information on back of this page****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey Time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, <i>Diorhabda</i> spp.]). If <i>Diorhabda</i> found, contact USFWS and State WIFL coordinator.	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s): Nicholas Rice & Julia Mueller	Date: _____	0	0	0	N					
	Start: _____									
	Stop: _____									
	Stop: _____									
	Total hrs: _____									
Survey # 2 Observer(s): Deborah Van Dooremolen & Timothy Ricks	Date: _____	0	0	0	N					
	Start: _____									
	Stop: _____									
	Stop: _____									
	Total hrs: _____									
Survey # 3 Observer(s): Timothy Ricks & Julia Mueller	Date: _____	0	0	0	N					
	Start: _____									
	Stop: _____									
	Stop: _____									
	Total hrs: _____									
Survey # 4 Observer(s): N/A	Date: _____									
	Start: _____									
	Stop: _____									
	Stop: _____									
	Total hrs: _____									
Survey # 5 Observer(s): N/A	Date: _____									
	Start: _____									
	Stop: _____									
	Stop: _____									
	Total hrs: _____									
Overall Site Summary <small>Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals.</small>		Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any WIFLs color-banded? Yes _____ No _____ Unknown _____				
Total survey hrs: <u>10.3</u>		0	0	0	0	If yes, report color combination(s) in the comments section on back of form and report to USFWS.				

Reporting Individual: Deborah Van Dooremolen

Date Report Completed: 10/15/2018

US Fish & Wildlife Service Permit #: TE148556-3

State Wildlife Agency Permit #: n/a

Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Deborah Van Dooremolen Phone # 702-822-3370
 Affiliation Southern Nevada Water Authority E-mail debbie.vandooremolen@snwa.com
 Site Name Las Vegas Wash, Route 2 Date report Completed 10/15/2018
 Was this site surveyed in a previous year? Yes X No Unknown
 Did you verify that this site name is consistent with that used in previous yrs? Yes X No Not Applicable
 If name is different, what name(s) was used in the past?
 If site was surveyed last year, did you survey the same general area this year? Yes X No If no, summarize below.
 Did you survey the same general area during each visit to this site this year? Yes X No If no, summarize below.
 Management Authority for Survey Area: Federal X Municipal/County X State Tribal Private
 Name of Management Entity or Owner (e.g., Tonto National Forest) Bureau of Reclamation and Clark County

Length of area surveyed: 4.1 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

X Native broadleaf plants (entirely or almost entirely, > 90% native)
 Mixed native and exotic plants (mostly native, 50 - 90% native)
 Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)
 Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific name.

Salix spp. (gooddingii & exigua), Populus fremontii

Average height of canopy (Do not include a range): 6 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections;
 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests;
 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features).
Attach additional sheets if necessary.

The Lake Las Vegas mitigation wetlands were not surveyed this year and have been dropped from the route due to lack of suitable habitat.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary

Willow Flycatcher (WIFL) Survey and Detection Form (revised April, 2010)

Site Name: Las Vegas Wash, Route 3 (South Bank) State: NV County: Clark
 USGS Quad Name: _____ Elevation: 440 (meters)
 Creek, River, or Lake Name: Las Vegas Wash

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)?

Yes X No _____

Survey Coordinates: Start: E 683246 N 3996084 UTM Datum: NAD83 (See instructions)
 Stop: E 681232 N 3995502 UTM Zone: 11N

If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

****Fill in additional site information on back of this page****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey Time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, <i>Diorhabda</i> spp.]). If <i>Diorhabda</i> found, contact USFWS and State WIFL coordinator.	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s): Deborah Van Dooremolen & Timothy Ricks	Date: 5/24/2018	0	0	0	N					
	Start: 5:00									
	Stop: 7:55									
	Total hrs: 2.9									
Survey # 2 Observer(s): Deborah Van Dooremolen & Julia Mueller	Date: 6/7/2018	0	0	0	N					
	Start: 4:37									
	Stop: 7:22									
	Total hrs: 2.8									
Survey # 3 Observer(s): Nicholas Rice & Julia Mueller	Date: 6/28/2018	0	0	0	N					
	Start: 4:21									
	Stop: 6:55									
	Total hrs: 2.6									
Survey # 4 Observer(s): N/A	Date:									
	Start:									
	Stop:									
	Total hrs:									
Survey # 5 Observer(s): N/A	Date:									
	Start:									
	Stop:									
	Total hrs:									
Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals.		Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any WIFLs color-banded? Yes _____ No _____ Unknown _____ If yes, report color combination(s) in the comments section on back of form and report to USFWS.				
Total survey hrs: 8.3	0	0	0	0						

Reporting Individual: Deborah Van Dooremolen Date Report Completed: 10/15/2018
 US Fish & Wildlife Service Permit #: TE148556-3 State Wildlife Agency Permit #: n/a

Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Deborah Van Dooremolen Phone # 702-822-3370
 Affiliation Southern Nevada Water Authority E-mail debbie.vandooremolen@snwa.com
 Site Name Las Vegas Wash, Route 3 Date report Completed 10/15/2018
 Was this site surveyed in a previous year? Yes X No Unknown
 Did you verify that this site name is consistent with that used in previous yrs? Yes X No Not Applicable
 If name is different, what name(s) was used in the past?
 If site was surveyed last year, did you survey the same general area this year? Yes X No If no, summarize below.
 Did you survey the same general area during each visit to this site this year? Yes X No If no, summarize below.
 Management Authority for Survey Area: Federal X Municipal/County X State Tribal Private
 Name of Management Entity or Owner (e.g., Tonto National Forest) Bureau of Reclamation and Clark County

Length of area surveyed: 2.1 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

X Native broadleaf plants (entirely or almost entirely, > 90% native)
 Mixed native and exotic plants (mostly native, 50 - 90% native)
 Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)
 Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific name.

Salix spp. (gooddingii & exigua), Populus fremontii

Average height of canopy (Do not include a range): 6 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections;
 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests;
 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features, Attach additional sheets if necessary).

The Upstream Pabco South revegetation site is now included in this route, rather than Route 4. The Upstream Pabco South Upper Plateau revegetation site, which had also been on Route 4, was not surveyed and has been dropped due to lack of suitable habitat.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary

Willow Flycatcher (WIFL) Survey and Detection Form (revised April, 2010)

Site Name: Las Vegas Wash, Route 4 (Duck Creek) State: NV County: Clark
 USGS Quad Name: _____ Elevation: 472 (meters)
 Creek, River, or Lake Name: Las Vegas Wash

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)?

Yes X No _____

Survey Coordinates: Start: E 679006 N 3995831 UTM Datum: NAD83 (See instructions)
 Stop: E 678823 N 3995887 UTM Zone: 11N

If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

****Fill in additional site information on back of this page****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey Time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, <i>Diorhabda</i> spp.]). If <i>Diorhabda</i> found, contact USFWS and State WIFL coordinator.	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s): Deborah Van Dooremolen & Timothy Ricks	Date: <u>5/24/2018</u>	0	0	0	N					
	Start: <u>8:27</u>									
	Stop: <u>8:53</u>									
	Total hrs: <u>0.4</u>									
Survey # 2 Observer(s): Timothy Ricks, Julia Mueller & Victoria Wuest	Date: <u>6/7/2018</u>	1	0	0	N	Responded during broadcast and sang several times before falling silent. Not detected again. Migrant.	1	?	679006	3995837
	Start: <u>8:44</u>									
	Stop: <u>9:33</u>									
	Total hrs: <u>0.8</u>									
Survey # 3 Observer(s): Nicholas Rice & Julia Mueller	Date: <u>6/28/2018</u>	0	0	0	N					
	Start: <u>7:08</u>									
	Stop: <u>7:30</u>									
	Total hrs: <u>0.4</u>									
Survey # 4 Observer(s): N/A	Date: _____									
	Start: _____									
	Stop: _____									
	Total hrs: _____									
Survey # 5 Observer(s): N/A	Date: _____									
	Start: _____									
	Stop: _____									
	Total hrs: _____									
Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals.		Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any WIFLs color-banded? Yes _____ No _____ Unknown If yes, report color combination(s) in the comments section on back of form and report to USFWS.				
Total survey hrs: <u>1.6</u>		0	0	0	0					

Reporting Individual: Deborah Van Dooremolen Date Report Completed: 10/15/2018
 US Fish & Wildlife Service Permit #: TE148556-3 State Wildlife Agency Permit #: n/a

Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual Deborah Van Dooremolen Phone # 702-822-3370
 Affiliation Southern Nevada Water Authority E-mail debbie.vandooremolen@snwa.com
 Site Name Las Vegas Wash, Route 4 Date report Completed 10/15/2018
 Was this site surveyed in a previous year? Yes X No Unknown
 Did you verify that this site name is consistent with that used in previous yrs? Yes X No Not Applicable
 If name is different, what name(s) was used in the past?
 If site was surveyed last year, did you survey the same general area this year? Yes No X If no, summarize below.
 Did you survey the same general area during each visit to this site this year? Yes X No If no, summarize below.
 Management Authority for Survey Area: Federal X Municipal/County X State Tribal Private
 Name of Management Entity or Owner (e.g., Tonto National Forest) Bureau of Reclamation and Clark County
 Length of area surveyed: 0.3 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

 Native broadleaf plants (entirely or almost entirely, > 90% native)
 Mixed native and exotic plants (mostly native, 50 - 90% native)
 Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)
X Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific name.

Tamarix ramosissima., Prosopis spp.

Average height of canopy (Do not include a range): 4 (meters)

Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections;
 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests;
 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features, Attach additional sheets if necessary).

This route used to begin upstream of Pabco Road Weir. With a desire for logical order following habitat changes, the route is now confined to the Duck Creek area. This area just had one surveyable patch of tamarisk in 2018 due to a May 2018 fire.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)

Attach additional sheets if necessary

Appendix B

Yellow-billed Cuckoo Survey Datasheets

Yellow Billed Cuckoo Survey Form

Site Name: Nature Preserve, Transect 1		County: Clark		State: NV	
USGS Quad Name: _____		Elevation: 496			
Creek, River, Wetland, or Lake Name: Las Vegas Wash					
Site Coordinates:	Start: E	678226	N	3996929	UTM Zone: 11N
	Stop: E	677941	N	3997350	Datum: NAD83
Ownership: <input type="checkbox"/> BLM <input type="checkbox"/> Reclamation <input type="checkbox"/> NPS <input type="checkbox"/> USFWS <input type="checkbox"/> USFS <input type="checkbox"/> Tribal <input type="checkbox"/> State <input type="checkbox"/> Private <input checked="" type="checkbox"/> Other (Municipal/County) Clark County					
Was site surveyed in previous year? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unknown If yes, what site name was used? Same					

Survey # Observer(s) (Last Name, First Initial)	Date (m/d/y) Survey, Time, Total Hours	Total Number of YBCUs detected.	Time Detected (AM):	Detect Type: I=Incidental P=Playback A=aural V=visual B=both	Voc. Type: CN=Contact CO=coo AL=alarm OT=other (describe)	Playback #: Number of times 'Kowlp' call played before YBCU responded	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	C u c k o o #	Corrected Coordinates	
								UTM E	UTM N				UTM E	UTM N
Survey Period #1 Observer(s): Deborah Van Dooremolen, Nicholas Rice & Timothy Ricks	Date:	0												
	6/25/2018													
	Start:													
	5:15 AM													
	Stop:													
	6:01 AM													
Total hrs:	Total:													
	0.7													
Survey Period #2 Observer(s): Nicholas Rice & Timothy Ricks	Date:	0												
	7/9/2018													
	Start:													
	5:23 AM													
	Stop:													
	7:05 AM													
Total hrs:	Total:													
	1.7*													
Survey Period #3 Observer(s): Deborah Van Dooremolen, Timothy Ricks & David Syzdek	Date:	0												
	7/24/2018													
	Start:													
	5:40 AM													
	Stop:													
	6:32 AM													
Total hrs:	Total:													
	0.9													
Survey Period #4 Observer(s): Deborah Van Dooremolen & Julia Mueller	Date:	0												
	8/9/2018													
	Start:													
	5:58 AM													
	Stop:													
	6:58 AM													
Total hrs:	Total:													
	1.0													
Survey Period #5 Observer(s): N/A	Date:													
	Start:													
	Stop:													
Total hrs:	Total:													
Survey Summary:		# Det	#PO	#PR	#CO	#Nests found	Total Survey Hours:							
Total YBCUs*		0					4.3*							
Notes (refer to Cuckoo # associated with individual detections)	*Time was recorded continuously for the two transects at the Nature Preserve on 7/9/2018, so total survey hours are overstated.													
*Include justification for these designations.														

Behavior Codes: AN = at nest, BI = brooding or incubating, CF = adult carrying food, CN = carrying nest material, COP = copulation, CP = catches prey, DD = distraction displays/defense of nesting area, EF = eats food, FL = recently fledged young of species incapable of flight, FLY = flying, FO = foraging, FS = adult carrying a fecal sac, FY = adults feeding nestlings, JUV = juvenile, NB = nest building, NE = active nest with unbroken eggs in it, NY = nest with young seen or heard in it, ON = occupied nest, PR = preening, SI = sitting, US = used, inactive nest with blue-green eggshells.

Fill in the following information completelyName of Reporting Individual Deborah Van Dooremolen Date Report completed 10/15/18Affiliation Southern Nevada Water Authority Phone # 702-822-3370 Email debbie.vandooremolen@snwa.comUSFWS Permit # TE148556-3 State Permit # n/aSite Name Nature Preserve, Transect 1Length of area surveyed 0.5 (in kilometers = km)Did you survey the same general area during each visit to this site this year? ☒ Yes ☐ No If no, summarize in comments belowIf site was surveyed last year, did you survey the same general area this year? ☒ Yes ☐ No If no, summarize in comments below

Overall Vegetation Characteristics: Overall, are the species in tree/shrub layer at this site comprised predominantly of (check one):

Native broadleaf plants (>75% native)	<input checked="" type="checkbox"/>	Mixed native and exotic plants (mostly native 51-75%)	<input type="checkbox"/>
Exotic/introduced plants (>75% exotic)	<input type="checkbox"/>	Mixed native and exotic plants (mostly exotic 51-75%)	<input type="checkbox"/>

Average height of canopy (m) 6 (specify units) metersEstimated Canopy Cover (percent) 75%

Overstory Vegetation: (provide percent estimate of the following dominant species). Use <1%, 10%, 25%, 50%, 75%, 90%, 100%.

<u>10%</u> Cottonwood	<u>25%</u> Goodding's Willow	<u>50%</u> Coyote Willow	<u>Other (specify)</u>
<u> </u> Tamarisk	<u> </u> Russian Olive	<u> </u> Other (specify) <u>Mesquite</u>	<u>Other (specify)</u>

Average height of understory canopy (m) 3 (specify units) metersEstimated Understory Cover (percent) 75%

Understory Vegetation: (provide percent estimate of the following dominant species). Use <1%, 10%, 25%, 50%, 75%, 90%, 100%.

<u> </u> Cottonwood	<u> </u> Goodding's Willow	<u>50%</u> Coyote Willow	<u>Other (specify)</u>
<u> </u> Tamarisk	<u> </u> Russian Olive	<u>25%</u> Other (specify) <u>Quailbush</u>	<u>Other (specify)</u>
<u>10%</u> Baccharis	<u> </u> New Mexico Oli		

Was surface water or saturated soil present at or adjacent to site within 300 meters? ☒ Yes ☐ No (circle one)Was surface water or saturated soil present at or adjacent to all patches surveyed? ☒ Yes ☐ No (circle one)

Comments. Please provide comments regarding differences between the survey patches within the site. For example, if the average canopy for this site is 30% cover, but within one patch it is 60% cover - please note. Also, please note significant differences between dominant overstory and understory vegetation among the patches. Document these differences with photographs whenever possible. Make sure to reference comments to photo number whenever available.

Please change percentages for dominant species to allow for more flexibility, or change to ranges of percentages (1-5, 5-25, 25-50, etc.).

Please provide USGS 7.5 minute quad (or similar) showing survey area to each survey form

Yellow-billed Cuckoo Survey and Detection Form, continued													
Name of Reporting Individual <u>Deborah Van Dooremolen</u>								Phone # <u>702-822-3370</u>					
Affiliation <u>Southern Nevada Water Authority</u>								Email <u>debbie.vandooremolen@snwa.com</u>					
Site Name <u>Nature Preserve, Transect 1</u>													
Survey # Observer(s) (Last Name, First Initial)	Date (m/d/y) Survey, Time, Total Hours	Time Detected (AM):	Detect Type: I=Incidental P=Playback A=aural V=visual B=both	Voc. Type: CN=Contact CO=coo AL=alarm OT=other (describe)	Playback #: Number of times 'Kowlp' call played before YBCU responded	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	C u c k o o #	Corrected Coordinates	
							UTM E	UTM N				UTM E	UTM N
No detections													

Notes - Cont. (refer to Cuckoo # associated with individual detections)

Yellow Billed Cuckoo Survey Form

Site Name: Nature Preserve, Transect 2		County: Clark		State: NV	
USGS Quad Name: _____		Elevation: 498			
Creek, River, Wetland, or Lake Name: Las Vegas Wash					
Site Coordinates:	Start: E	678125	N	3997390	UTM Zone: 11N
	Stop: E	678327	N	3997102	Datum: NAD83
Ownership: <input type="checkbox"/> BLM <input type="checkbox"/> Reclamation <input type="checkbox"/> NPS <input type="checkbox"/> USFWS <input type="checkbox"/> USFS <input type="checkbox"/> Tribal <input type="checkbox"/> State <input type="checkbox"/> Private <input checked="" type="checkbox"/> Other (Municipal/County) Clark County					
Was site surveyed in previous year? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unknown If yes, what site name was used? Same					

Survey # Observer(s) (Last Name, First Initial)	Date (m/d/y) Survey, Time, Total Hours	Total Number of YBCUs detected.	Time Detected (AM):	Detect Type: I=Incidental P=Playback A=aural V=visual B=both	Voc. Type: CN=Contact CO=coo AL=alarm OT=other (describe)	Playback #: Number of times 'Kowlp' call played before YBCU responded	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	C u c k o o #	Corrected Coordinates	
								UTM E	UTM N				UTM E	UTM N
Survey Period #1 Observer(s): Deborah Van Dooremolen, Nicholas Rice & Timothy Ricks	Date:	0												
	6/25/2018													
	Start:													
	6:08 AM													
	Stop:													
	6:46 AM													
	Total hrs:	Total:												
	0.6													
Survey Period #2 Observer(s): Nicholas Rice & Timothy Ricks	Date:	0												
	7/9/2018													
	Start:													
	5:23 AM													
	Stop:													
	7:05 AM													
	Total hrs:	Total:												
	1.7*													
Survey Period #3 Observer(s): Deborah Van Dooremolen, Timothy Ricks & David Syzdek	Date:	0												
	7/24/2018													
	Start:													
	6:46 AM													
	Stop:													
	7:34 AM													
	Total hrs:	Total:												
	0.8													
Survey Period #4 Observer(s): Deborah Van Dooremolen & Julia Mueller	Date:	0												
	8/9/2018													
	Start:													
	7:11 AM													
	Stop:													
	7:51 AM													
	Total hrs:	Total:												
	0.7													
Survey Period #5 Observer(s): N/A	Date:													
	Start:													
	Stop:													
	Total hrs:	Total:												
Survey Summary:		# Det	#PO	#PR	#CO	#Nests found	Total Survey Hours:							
Total YBCUs*		0					3.8*							
Notes (refer to Cuckoo # associated with individual detections)	*Time was recorded continuously for the two transects at the Nature Preserve on 7/9/2018, so total survey hours are overstated.													
*Include justification for these designations.														
Behavior Codes: AN = at nest, BI = brooding or incubating, CF = adult carrying food, CN = carrying nest material, COP = copulation, CP = catches prey, DD = distraction displays/defense of nesting area, EF = eats food, FL = recently fledged young of species incapable of flight, FLY = flying, FO = foraging, FS = adult carrying a fecal sac, FY = adults feeding nestlings, JUV = juvenile, NB = nest building, NE = active nest with unbroken eggs in it, NY = nest with young seen or heard in it, ON = occupied nest, PR = preening, SI = sitting, US = used, inactive nest with blue-green eggshells.														

Fill in the following information completely

Name of Reporting Individual Deborah Van Dooremolen Date Report completed 10/15/18

Affiliation Southern Nevada Water Authority Phone # 702-822-3370 Email debbie.vandooremolen@snwa.com

USFWS Permit # TE148556-3 State Permit # n/a

Site Name Nature Preserve, Transect 2

Length of area surveyed 0.4 (in kilometers = km)

Did you survey the same general area during each visit to this site this year? ☒ Yes ☐ No If no, summarize in comments below

If site was surveyed last year, did you survey the same general area this year? ☒ Yes ☐ No If no, summarize in comments below

Overall Vegetation Characteristics: Overall, are the species in tree/shrub layer at this site comprised predominantly of (check one):

Native broadleaf plants (>75% native)	<input checked="" type="checkbox"/>	Mixed native and exotic plants (mostly native 51-75%)	<input type="checkbox"/>
Exotic/introduced plants (>75% exotic)	<input type="checkbox"/>	Mixed native and exotic plants (mostly exotic 51-75%)	<input type="checkbox"/>

Average height of canopy (m) 9 (specify units) meters

Estimated Canopy Cover (percent) 75%

Overstory Vegetation: (provide percent estimate of the following dominant species). Use <1%, 10%, 25%, 50%, 75%, 90%, 100%.

<u>50%</u> Cottonwood	<u>50%</u> Goodding's Willow	<u> </u> Coyote Willow	<u> </u> Other (specify)
<u> </u> Tamarisk	<u> </u> Russian Olive	<u> </u> Other (specify)	<u> </u> Other (specify)

Average height of understory canopy (m) 3 (specify units) meters

Estimated Understory Cover (percent) 75%

Understory Vegetation: (provide percent estimate of the following dominant species). Use <1%, 10%, 25%, 50%, 75%, 90%, 100%.

<u> </u> Cottonwood	<u> </u> Goodding's Willow	<u>75%</u> Coyote Willow	<u> </u> Other (specify)
<u> </u> Tamarisk	<u> </u> Russian Olive	<u> </u> Other (specify)	<u> </u> Other (specify)
<u>10%</u> Baccharis	<u> </u> New Mexico Oli		

Was surface water or saturated soil present at or adjacent to site within 300 meters? ☒ Yes ☐ No (circle one)

Was surface water or saturated soil present at or adjacent to all patches surveyed? ☒ Yes ☐ No (circle one)

Comments. Please provide comments regarding differences between the survey patches within the site. For example, if the average canopy for this site is 30% cover, but within one patch it is 60% cover - please note. Also, please note significant differences between dominant overstory and understory vegetation among the patches. Document these differences with photographs whenever possible. Make sure to reference comments to photo number whenever available.

Please change percentages for dominant species to allow for more flexibility, or change to ranges of percentages (1-5, 5-25, 25-50, etc.).

Please provide USGS 7.5 minute quad (or similar) showing survey area to each survey form

Yellow-billed Cuckoo Survey and Detection Form, continued													
Name of Reporting Individual <u>Deborah Van Dooremolen</u>						Phone # <u>702-822-3370</u>							
Affiliation <u>Southern Nevada Water Authority</u>						Email <u>debbie.vandooremolen@snwa.com</u>							
Site Name <u>Nature Preserve, Transect 2</u>													
Survey # Observer(s) (Last Name, First Initial)	Date (m/d/y) Survey, Time, Total Hours	Time Detected (AM):	Detect Type: I=Incidental P=Playback A=aural V=visual B=both	Voc. Type: CN=Contact CO=coo AL=alarm OT=other (describe)	Playback #: Number of times 'Kowlp' call played before YBCU responded	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	C u c k o o #	Corrected Coordinates	
							UTM E	UTM N				UTM E	UTM N
No detections													

Notes - Cont. (refer to Cuckoo # associated with individual detections)

Yellow Billed Cuckoo Survey Form

Site Name: LV Wash (UP to UCE), Transect 1 (No. Bank)				Co: Clark		State: NV	
USGS Quad Name: _____				Elevation: 467			
Creek, River, Wetland, or Lake Name: Las Vegas Wash							
Site Coordinates:		Start: E	681311	N	3995667	UTM Zone: 11N	
		Stop: E	683074	N	3996147	Datum: NAD83	
Ownership: BLM Reclamation PS USFWS USFS Tribal State Private Other (Municipal/County) Clark County							
Was site surveyed in previous year? Yes No Unknown				If yes, what site name was used? Same			

Survey # Observer(s) (Last Name, First Initial)	Date (m/d/y) Survey, Time, Total Hours	Total Number of YBCUs detected.	Time Detected (AM):	Detect Type: I=Incidental P=Playback A=aural V=visual B=both	Voc. Type: CN=Contact CO=coo AL=alarm OT=other (describe)	Playback #: Number of times 'Kowlp' call played before YBCU responded	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	C u c k o o #	Corrected Coordinates	
								UTM E	UTM N				UTM E	UTM N
Survey Period #1 Observer(s): Nicholas Rice & Timothy Ricks	Date:	0												
	6/26/2018													
	Start:													
	5:11 AM													
	Stop:													
	9:00 AM													
	Total hrs:	Total:												
	3.8*													
Survey Period #2 Observer(s): Nicholas Rice & Timothy Ricks	Date:	0												
	7/10/2018													
	Start:													
	5:22 AM													
	Stop:													
	8:44 AM													
	Total hrs:	Total:												
	3.4*													
Survey Period #3 Observer(s): Deborah Van Dooremolen & Timothy Ricks	Date:	0												
	7/25/2018													
	Start:													
	8:33 AM													
	Stop:													
	10:05 AM													
	Total hrs:	Total:												
	1.5													
Survey Period #4 Observer(s): Nicholas Rice & Timothy Ricks	Date:	0												
	8/9/2018													
	Start:													
	5:47 AM													
	Stop:													
	7:18 AM													
	Total hrs:	Total:												
	1.5													
Survey Period #5 Observer(s): N/A	Date:													
	Start:													
	Stop:													
		Total hrs:	Total:											

Survey Summary:		# Det	#PO	#PR	#CO	#Nests found	Total Survey Hours:
Total YBCUs*		0					10.2*

Notes (refer to Cuckoo # associated with individual detections)	*Time was recorded continuously for the two transects along the Wash on 6/26/2018 and 7/10/2018, so total survey hours are overstated.

*Include justification for these designations.

Behavior Codes: AN = at nest, BI = brooding or incubating, CF = adult carrying food, CN = carrying nest material, COP = copulation, CP = catches prey, DD = distraction displays/defense of nesting area, EF = eats food, FL = recently fledged young of species incapable of flight, FLY = flying, FO = foraging, FS = adult carrying a fecal sac, FY = adults feeding nestlings, JUV = juvenile, NB = nest building, NE = active nest with unbroken eggs in it, NY = nest with young seen or heard in it, ON = occupied nest, PR = preening, SI = sitting, US = used, inactive nest with blue-green eggshells.

Fill in the following information completelyName of Reporting Individual Deborah Van Dooremolen Date Report completed 10/15/18Affiliation Southern Nevada Water Authority Phone # 702-822-3370 Email debbie.vandooremolen@snwa.comUSFWS Permit # TE148556-3 State Permit # n/aSite Name Las Vegas Wash (Upstream Pabco to Upstream Calico Emergent), Transect 1 (North Bank)Length of area surveyed 2.1 (in kilometers = km)Did you survey the same general area during each visit to this site this year? ☒ Yes ☐ No If no, summarize in comments belowIf site was surveyed last year, did you survey the same general area this year? ☒ Yes ☐ No If no, summarize in comments below

Overall Vegetation Characteristics: Overall, are the species in tree/shrub layer at this site comprised predominantly of (check one):

Native broadleaf plants (>75% native)

☒

Mixed native and exotic plants (mostly native 51-75%)

Exotic/introduced plants (>75% exotic)

Mixed native and exotic plants (mostly exotic 51-75%)

Average height of canopy (m) 8(specify units) metersEstimated Canopy Cover (percent) 75%

Overstory Vegetation: (provide percent estimate of the following dominant species). Use <1%, 10%, 25%, 50%, 75%, 90%, 100%.

25%Cottonwood25%Goodding's WillowCoyote WillowOther (specify)TamariskRussian Olive25%Other (specify) MesquiteOther (specify)Average height of understory canopy (m) 3(specify units) metersEstimated Understory Cover (percent) 25%

Understory Vegetation: (provide percent estimate of the following dominant species). Use <1%, 10%, 25%, 50%, 75%, 90%, 100%.

CottonwoodGoodding's Willow10%Coyote WillowOther (specify)TamariskRussian Olive10%Other (specify) QuailbushOther (specify)10%BaccharisNew Mexico OliWas surface water or saturated soil present at or adjacent to site within 300 meters? ☒ Yes ☐ No (circle one)Was surface water or saturated soil present at or adjacent to all patches surveyed? ☒ Yes ☐ No (circle one)

Comments. Please provide comments regarding differences between the survey patches within the site. For example, if the average canopy for this site is 30% cover, but within one patch it is 60% cover - please note. Also, please note significant differences between dominant overstory and understory vegetation among the patches. Document these differences with photographs whenever possible. Make sure to reference comments to photo number whenever available.

Please change percentages for dominant species to allow for more flexibility, or change to ranges of percentages (1-5, 5-25, 25-50, etc.).

Please provide USGS 7.5 minute quad (or similar) showing survey area to each survey form

Yellow-billed Cuckoo Survey and Detection Form, continued													
Name of Reporting Individual <u>Deborah Van Dooremolen</u>								Phone # <u>702-822-3370</u>					
Affiliation <u>Southern Nevada Water Authority</u>								Email <u>debbie.vandooremolen@snwa.com</u>					
Site Name <u>Las Vegas Wash (Upstream Pabco to Upstream Calico Emergent), Transect 1 (North Bank)</u>													
Survey # Observer(s) (Last Name, First Initial)	Date (m/d/y) Survey, Time, Total Hours	Time Detected (AM):	Detect Type: I=Incidental P=Playback A=aural V=visual B=both	Voc. Type: CN=Contact CO=coo AL=alarm OT=other (describe)	Playback #: Number of times 'Kowlp' call played before YBCU responded	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	C u c k o o #	Corrected Coordinates	
							UTM E	UTM N				UTM E	UTM N
No detections													

Notes - Cont. (refer to Cuckoo # associated with individual detections)

Yellow Billed Cuckoo Survey Form

Site Name: LV Wash (UP to UCE), Transect 2 (So. Bank)				Co: Clark		State: NV	
USGS Quad Name: _____				Elevation: 472			
Creek, River, Wetland, or Lake Name: Las Vegas Wash							
Site Coordinates:		Start: E	681135	N	3995508	UTM Zone: 11N	
		Stop: E	683150	N	3996020	Datum: NAD83	
Ownership: BLM Reclamation PS USFWS USFS Tribal State Private Other (Municipal/County) Clark County							
Was site surveyed in previous year? Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown <input type="radio"/> If yes, what site name was used? Same							

Survey # Observer(s) (Last Name, First Initial)	Date (m/d/y) Survey, Time, Total Hours	Total Number of YBCUs detected.	Time Detected (AM):	Detect Type: I=Incidental P=Playback A=aural V=visual B=both	Voc. Type: CN=Contact CO=coo AL=alarm OT=other (describe)	Playback #: Number of times 'Kowlp' call played before YBCU responded	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	C u c k o o #	Corrected Coordinates	
								UTM E	UTM N				UTM E	UTM N
Survey Period #1 Observer(s): Nicholas Rice & Timothy Ricks	Date:	0												
	6/26/2018													
	Start:													
	5:11 AM													
	Stop:													
	9:00 AM													
Total hrs:	Total:													
	3.8*													
Survey Period #2 Observer(s): Nicholas Rice & Timothy Ricks	Date:	0												
	7/10/2018													
	Start:													
	5:22 AM													
	Stop:													
	8:44 AM													
Total hrs:	Total:													
	3.4*													
Survey Period #3 Observer(s): Deborah Van Dooremolen & Timothy Ricks	Date:	0												
	7/25/2018													
	Start:													
	5:41 AM													
	Stop:													
	8:17 AM													
Total hrs:	Total:													
	2.6													
Survey Period #4 Observer(s): Nicholas Rice & Timothy Ricks	Date:	0												
	8/9/2018													
	Start:													
	7:47 AM													
	Stop:													
	9:06 AM													
Total hrs:	Total:													
	1.3													
Survey Period #5 Observer(s): N/A	Date:													
	Start:													
	Stop:													
Total hrs:	Total:													

Survey Summary:		# Det	#PO	#PR	#CO	#Nests found	Total Survey Hours:
Total YBCUs*		0					11.1*

Notes (refer to Cuckoo # associated with individual detections)

*Time was recorded continuously for the two transects along the Wash on 6/26/2018 and 7/10/2018, so total survey hours are overstated.

**Include justification for these designations.

Behavior Codes: AN = at nest, BI = brooding or incubating, CF = adult carrying food, CN = carrying nest material, COP = copulation, CP = catches prey, DD = distraction displays/defense of nesting area, EF = eats food, FL = recently fledged young of species incapable of flight, FLY = flying, FO = foraging, FS = adult carrying a fecal sac, FY = adults feeding nestlings, JUV = juvenile, NB = nest building, NE = active nest with unbroken eggs in it, NY = nest with young seen or heard in it, ON = occupied nest, PR = preening, SI = sitting, US = used, inactive nest with blue-green eggshells.

Fill in the following information completelyName of Reporting Individual Deborah Van Dooremolen Date Report completed 10/15/18Affiliation Southern Nevada Water Authority Phone # 702-822-3370 Email debbie.vandooremolen@snwa.comUSFWS Permit # TE148556-3 State Permit # n/aSite Name Las Vegas Wash (Upstream Pabco to Upstream Calico Emergent), Transect 2 (South Bank)Length of area surveyed 1.8 (in kilometers = km)Did you survey the same general area during each visit to this site this year? ☒ Yes ☐ No If no, summarize in comments belowIf site was surveyed last year, did you survey the same general area this year? ☒ Yes ☐ No If no, summarize in comments below

Overall Vegetation Characteristics: Overall, are the species in tree/shrub layer at this site comprised predominantly of (check one):

Native broadleaf plants (>75% native)

☒

Mixed native and exotic plants (mostly native 51-75%)

Exotic/introduced plants (>75% exotic)

Mixed native and exotic plants (mostly exotic 51-75%)

Average height of canopy (m) 8(specify units) metersEstimated Canopy Cover (percent) 75%

Overstory Vegetation: (provide percent estimate of the following dominant species). Use <1%, 10%, 25%, 50%, 75%, 90%, 100%.

25%Cottonwood25%Goodding's WillowCoyote WillowOther (specify)TamariskRussian Olive25%Other (specify) MesquiteOther (specify)Average height of understory canopy (m) 3(specify units) metersEstimated Understory Cover (percent) 25%

Understory Vegetation: (provide percent estimate of the following dominant species). Use <1%, 10%, 25%, 50%, 75%, 90%, 100%.

CottonwoodGoodding's Willow10%Coyote WillowOther (specify)TamariskRussian Olive10%Other (specify) QuailbushOther (specify)10%BaccharisNew Mexico OliWas surface water or saturated soil present at or adjacent to site within 300 meters? ☒ Yes ☐ No (circle one)Was surface water or saturated soil present at or adjacent to all patches surveyed? ☒ Yes ☐ No (circle one)

Comments. Please provide comments regarding differences between the survey patches within the site. For example, if the average canopy for this site is 30% cover, but within one patch it is 60% cover - please note. Also, please note significant differences between dominant overstory and understory vegetation among the patches. Document these differences with photographs whenever possible. Make sure to reference comments to photo number whenever available.

Please change percentages for dominant species to allow for more flexibility, or change to ranges of percentages (1-5, 5-25, 25-50, etc.).

Please provide USGS 7.5 minute quad (or similar) showing survey area to each survey form

Yellow-billed Cuckoo Survey and Detection Form, continued													
Name of Reporting Individual <u>Deborah Van Dooremolen</u>						Phone # <u>702-822-3370</u>							
Affiliation <u>Southern Nevada Water Authority</u>						Email <u>debbie.vandooremolen@snwa.com</u>							
Site Name <u>Las Vegas Wash (Upstream Pabco to Upstream Calico Emergent), Transect 2 (South Bank)</u>													
Survey # Observer(s) (Last Name, First Initial)	Date (m/d/y) Survey, Time, Total Hours	Time Detected (AM):	Detect Type: I=Incidental P=Playback A=aural V=visual B=both	Voc. Type: CN=Contact CO=coo AL=alarm OT=other (describe)	Playback #: Number of times 'Kowlp' call played before YBCU responded	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	C u c k o o #	Corrected Coordinates	
							UTM E	UTM N				UTM E	UTM N
No detections													

Notes - Cont. (refer to Cuckoo # associated with individual detections)