

**Status of western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) in
Big Bend National Park, 2015**



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Abstract: Between June 18 and July 10, 2015, a total of twelve surveys in five different locations were conducted to provide an initial survey of the presence and status of yellow-billed cuckoo in Big Bend National Park. Adult cuckoos were documented in four of the five locations, dependent and independent juvenile birds were observed at one location only on the park's east side, and two active nests were located in two different sites on the park's west side. Initial results indicate that yellow-billed cuckoos on the park's east side utilize different habitat and appear to be on a different schedule with regard to nesting (earlier) than those on the west side.

Background: Effective November 3, 2014, a final rule determination by the US Fish & Wildlife Service recognized the western race of yellow-billed cuckoo (*Coccyzus americanus occidentalis*) and provided threatened species status under the Endangered Species Act of 1973. Distinction between the two races is based on differences in morphology, breeding range and behavior, food habits, habitat use and, significantly, the timing of migration and nesting. The geographical dividing line between the two races' breeding range is, over most of the United States and Mexico, widely separated, except for an area of west Texas along the Rio Grande in the vicinity of Big Bend National Park. The dividing line falls approximately midway through Big Bend National Park, implying that cuckoos on the park's east side belong to the eastern race (*C. a. americanus*), and those on the west are members of the western race (*C. a. occidentalis*).

Sample Areas: An initial assumption was that, because the western subspecies is strongly tied to riparian habitat, particularly mature cottonwood/willow associations, surveys should be directed to areas with known preferred habitat. In Big Bend National Park, this specific habitat occurs in the Rio Grande Village area on the park's southeast corner, Cottonwood Campground on the park's southwest corner, and lower Terlingua Creek on the park's western border, upstream from the historic Terlingua Abajo sites. In addition to these cottonwood/willow association sites, a mesquite dominated habitat just to the south of Castolon, also on the park's southwest corner (Mesquite 1), was included as a follow-up to a 2008 study of riparian corridor birds in tamarisk beetle impact zones. These four locations were scheduled to be surveyed three times each over a period of approximately one month (mid-June to mid-July).

Two modifications occurred in the course of the survey. 1) During the first Cottonwood Campground survey, cuckoo activity dictated that the sample area be expanded to cover mesquite dominated habitat west to Blue Creek. This modification remained consistent through all three surveys. 2) A fifth census area - Park Route 16 (Santa Elena Canyon Trailhead to Alamo Creek) - was added during the third round of surveys after one location (Lower Terlingua Creek) failed to produce any cuckoos during the initial two visits and rainfall and runoff made access to the site more difficult. This final area received only one survey – see Discussion section.

Survey Procedures: Surveys began approximately ½ hour prior to official sunrise and were performed until heat precluded further observer and bird activity (0630 to 1130). Two observers walked the entire survey area, listening and looking for activity, and at times recorded cuckoo calls were utilized as lures in areas where there was no apparent activity. Time, location, plant associations, approximate age-class, vocalizations and behavior of each individual were recorded; photographs were taken when possible of individual birds. Located nests were documented with geo-locations, photographed, and nest status

(adults sitting, downy young visible, fledglings present) recorded. Initial visits served to establish presence of cuckoos, while second and third visits served to focus in on potential breeding pairs or potential nest sites.

Results:

Rio Grande Village: Survey dates: June 18, June 26, and July 6.

1) Individual survey results are tabulated in worksheet 1: Yellow-Billed Cuckoo Survey - Rio Grande Village.

2) At least 11 adult yellow-billed cuckoos were present in the survey area as follows:

- One pair of adult cuckoos was active in the NPS campground from the campground entrance around Loops 1, 8 and 9.
- One pair of adults was active in the no-generator zone at the east end of the NPS campground, centered on campsite #22.
- A third pair was active around the group campground, particularly site #C.
- Two adult cuckoos, most likely a pair, were consistent around the common black-hawk nesting site.
- Individual adult cuckoos were located at Daniels Ranch, the southeast end of the old overflow area, and the cottonwood/canal border at the SW corner of the store parking lot.

3) At least four juvenile birds (out of the nest, and either dependent on or independent of adults) were observed in the survey area as follows:

- One dependent juvenile attended by adults on June 26 in NPS campground near site #57.
- One dependent juvenile attended by adults on June 26 in group campground #C.
- One dependent juvenile attended by an adult on July 6 in NPS campground near sites 5 & 6.
- One independent juvenile, foraging on its own, on July 6 in NPS campground near site #57. Possibly this is the same juvenile observed on June 26, so this bird not counted as a separate individual.
- One independent juvenile, foraging on its own, on July 6 at the SW corner of the store parking lot.

Results-continued:

Cottonwood-Blue Creek: Survey dates: June 19, June 27, and July 7.

1) Individual survey results are tabulated in worksheet 2: Yellow-Billed Cuckoo Survey – Cottonwood-Blue Creek.

2) At least 3 adult yellow-billed cuckoos were present in the survey area as follows:

- One pair of adult cuckoos was active in the mesquite dominated habitat to the west of the NPS campground and amphitheater, ranging towards the mouth of Blue Creek. An active nest (adult brooding and feeding) with at least one naked nestling was located on July 7 in an old-growth mesquite.
- One adult was observed calling briefly from a cottonwood on the west side of the NPS campground near campsite #5, on July 7, then flew westward into mesquite thicket bordering the camp area.

Mesquite 1: Survey dates: June 21, June 29, and July 9.

1) Individual survey results are tabulated in worksheet 3: Yellow-Billed Cuckoo Survey – Mesquite 1.

2) At least 2 adult yellow-billed cuckoos were present in the survey area as follows:

- One pair of adult cuckoos was active in the mesquite dominated bottomland south of Castolon. An active nest (adult brooding, possibly feeding) with at least one nestling (movement in nest – fluttering visible through loose nest construction, but unable to see the bird directly) was located on July 9. The nest was in an old growth mesquite.

Route 16 Santa Elena Canyon Trail parking lot to Alamo Creek: Survey date: July 10.

1) Individual survey results are tabulated in worksheet 4: Yellow-Billed Cuckoo Survey - Rte.16-SEC Trail Parking Lot - Alamo Creek.

2) At least 9 adult yellow-billed cuckoos were present in the survey area as follows:

- One adult cuckoo calling from mesquite dominated habitat immediately west and below the SEC overlook.
- One adult cuckoo calling from mesquite dominated habitat immediately north of the Dorgan-Sublett interpretive trail.
- One adult pair active (displaying, calling foraging) in mesquite dominated habitat just south of Rte. 16 in the historic Grand Canyon Farm area.
- One adult pair active (displaying, calling foraging) in mesquite dominated habitat just southeast of Rte 16 in the historic Grand Canyon Farm area.
- One adult cuckoo calling from mesquite dominated habitat south of Rte. 16 MP 3.

Results-continued:

Route 16 Santa Elena Canyon Trail parking lot to Alamo Creek: Survey date: July 10. – continued.

- One adult cuckoo calling from mesquite dominated habitat in Mexico across the river from the historic La Coyota site.
- One adult cuckoo calling from mesquite dominated habitat on Alamo Creek near the historic La Coyota site.

Lower Terlingua Creek: Survey dates: June 20, June 28.

- No cuckoos of any age-class were observed on this survey.

Discussion:

While it was not within the scope of this initial assessment to determine whether cuckoos on the west side of the park are in fact a different subspecies from those on the east, the surveys did highlight two differences between the groups that might merit future investigation.

1) Cuckoos present at Rio Grande Village utilize different habitat than those occurring on the park's west side.

Rio Grande Village is a manicured and maintained environment with elements of native riparian corridor habitat. It contains stands of even-aged, mature cottonwoods from 50 to 80+ feet tall, surrounded by open fields studded with orchard-like plantings of non-native deciduous trees (Arizona ash, locust sp.) standing 20 to 30 feet tall. Bordering the fields are dense mixed thickets of shrubby honey mesquite, acacia, tamarisk and other woody shrubs. On the park's east side there is very little mature mesquite dominated habitat in the same concentration and density as that found on the park's west side riparian corridor.

All of the cuckoos observed at RGV were closely associated with the cottonwood canopy and deciduous non-native environment, far less so with the brushy thickets. Almost all display and foraging activity occurred in cottonwoods and ash/locust orchards.

On the park's west side, only Cottonwood campground has a similarly structured environment, though it lacks the non-native deciduous trees. There, this component is replaced by orchard-like plantings of huisache and other acacia species and honey mesquite. In contrast to Rio Grande Village, bordering the campground to the east and west are mesquite dominated thickets with continuous dense stands of mature honey mesquite standing 20 to 30 feet tall and displaying strong horizontal limb development.

The one pair of adult cuckoos found here was observed entirely in mesquite dominated habitat. The nest of this pair was constructed in a honey mesquite tree standing over 20 feet tall, with a DBH of >12", on a horizontal limb approximately 15 feet above ground level.

By contrast, only on the final survey did one adult appear briefly in the cottonwood canopy, then returned to mesquite dominated woods. Otherwise, no cuckoos were observed in the cottonwoods during three searches.

Discussion - continued:

The Lower Terlingua Creek site was expected to harbor many cuckoos given the nature of the environment found there: naturally occurring and extensive stands of mature cottonwood, surrounded by dense thickets of mesquite and acacia and adjacent to willow lined creek banks. Much to our surprise, not a cuckoo was heard or seen during two thorough surveys of the area.

On closer inspection of the structure of the environment at the LTC site, some differences were noted. The thickets surrounding the cottonwood stands are largely comprised of screwbean mesquite (*Prosopis pubescens*). A less robustly growing tree than honey mesquite (*P. glandulosa*), the screwbean mesquite formed dense thickets but lacked full canopy and strong lateral limb development. Where honey mesquite was growing, it occurred as dense stands of young shrubs, less than 10 feet tall.

The Mesquite 1 site was entirely comprised of honey mesquite dominated habitat, with very dense and continuous stands of mature, full canopy trees with strong lateral limb development. Only one pair of cuckoos was located here and, like the pair at the Cottonwood-Blue-Creek site, their nest was constructed in a full canopy mesquite standing over 20 feet tall, a DBH > 12", and exhibiting strong lateral limb development.

Based on these findings we postulated that the presence of mesquite dominated habitat with continuous stands of mature trees was a likely predictor for the occurrence of yellow-billed cuckoo, and that the presence of cottonwood canopy was not a limiting factor. The decision was made to abandon the final Lower Terlingua Creek survey and focus a one-time sample census on mesquite dominated areas along park route 16, running west to east from the Santa Elena Canyon trailhead to Alamo Creek. As a control, several stops were made at locations along the route in tamarisk dominated habitat and recorded cuckoo calls were played. These attempts elicited no responses. In targeted locations containing mature mesquite stands however, adult cuckoos were active.

Recommendation: It may be that east-side cuckoos are utilizing available habitat in the absence of mature mesquite stands. Future assessments might include as yet unidentified areas of mature mesquite dominated habitat on the park's east side to determine habitat preference.

2) Cuckoos present at Rio Grande Village appear to be on a different schedule with regard to nesting than those on the west side.

Dates of first detection of yellow-billed cuckoos this year were May 22 at Cottonwood campground and May 23 at Rio Grande Village. This does not indicate actual arrival dates, but does provide a point of reference for establishment of territories and nest building. Given the closeness of the dates, it might be expected that cuckoos on either side of the park would be on similar schedules with regard the timing of egg-laying, hatching and fledging. This appears not to be the case.

On the park's west side sites, no fledglings or juvenile birds were detected at any time. Nests weren't located until the last round of surveys at the end of the first week of July. One nestling was naked and able to lift its head above the nest rim (can occur within 1.5 hours of hatching – Hughes, 2015), the second nestling fluttering but apparently not yet able to lift its head, both behaviors indicating very recent hatching. Adult birds observed prior to that time frame were actively foraging and staying relatively faithful to areas that ultimately proved to be nest sites.

At Rio Grande Village, dependent juveniles appeared by the time of the second round of surveys on June 26, and both dependent and independent juveniles were observed by the end of the first week of July. Adults observed during the first survey in mid-June were actively foraging and some were carrying prey consistently and repeatedly to the same direction - presumably to a nest. It appears that cuckoo nesting here is ahead of that on the park's west side.

One postulate is that the difference in timing is the result of an undetected earlier arrival time at RGV. Once cuckoos are present, they are fairly easy to detect by their loud and distinctive calls, although much harder to visually locate and follow. Birding visits to RGV occurred on several dates prior to May 23, from late April up to May 13. No cuckoo calls were heard during those prior visits.

Another possibility is that juvenile cuckoos were missed on the second round west side surveys. Given the difficulty of moving through and seeing cuckoos in the dense mesquite dominated habitat, this is certainly a possibility. Juveniles apparently do not vocalize as often or as loudly as adults, and recently fledged birds often sit frozen at perch until an adult approaches. They could certainly have been overlooked.

Incubation for yellow-billed cuckoo takes 9 - 11 days and fledging follows quickly, within 7-9 days (Hughes 2015). The appearance of early-stage fledglings by late June is consistent with a late May arrival date and a nesting start by the end of May/early June.

Recommendation: Future assessments could start at an earlier date (late May to early June) to capture a better understanding of the cuckoo breeding cycle on the Big Bend from arrival through fledging.

References:

Hughes, Janice M. 2015. Yellow-billed Cuckoo (*Coccyzus americanus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/418>

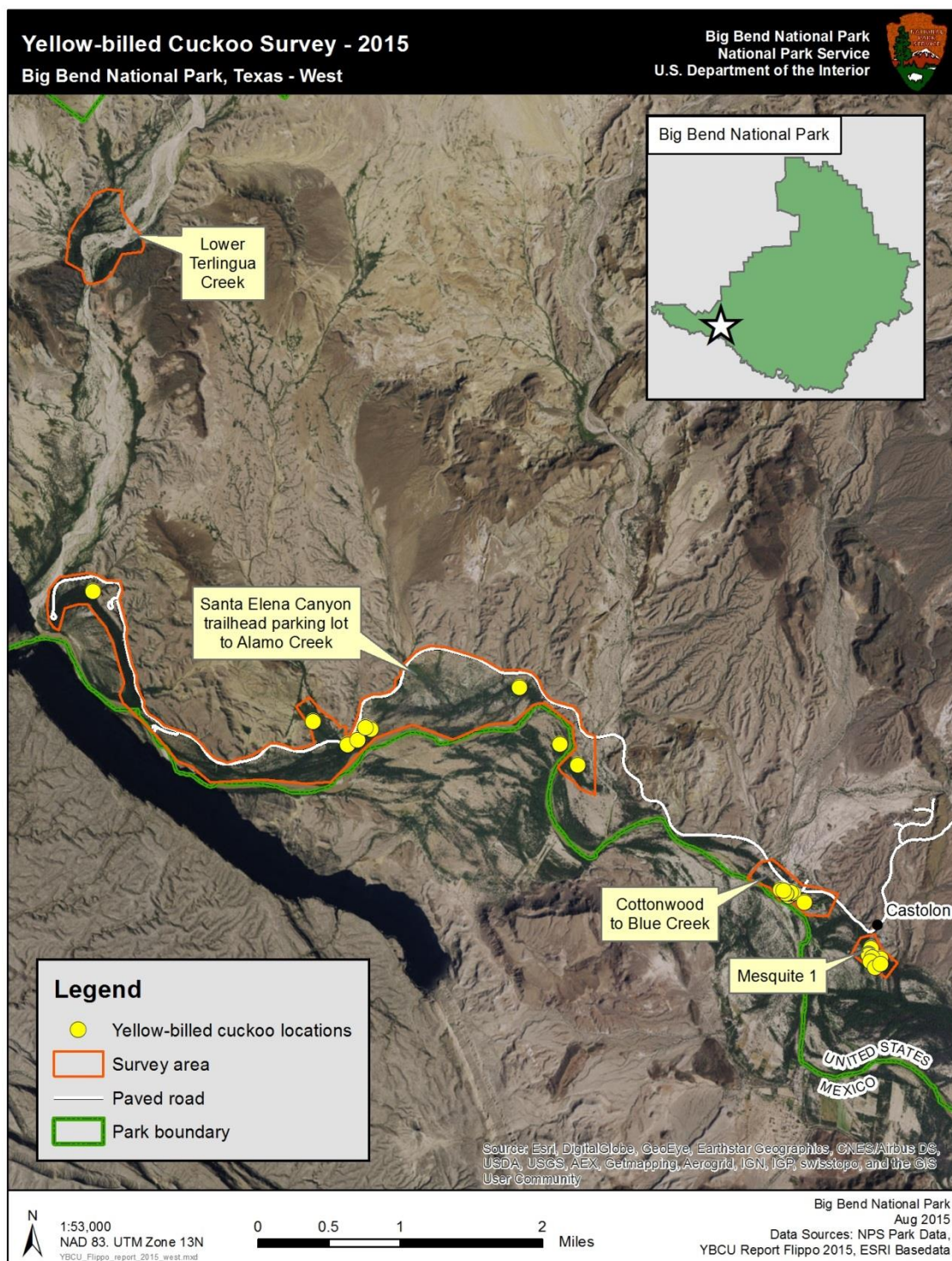
Laymon, Stephen A. 2000. Supporting Information for the Listing of the Western Yellow-billed Cuckoo. U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, CA.

Table: Key to worksheets 1 - 4

Location: Start/End	May include a physical description (CG = campground). If 2 UTM coordinates provided, bird was observed in a range of locations from first coordinate to last coordinate.	
Time: Start/End	Duration of observation.	
Observation	S = Seen H = Heard	
Age Class	A = Adult J-d = Juvenile dependent: Out of nest, but tended by adults. Tail feathers still emerging. No yellow on lower mandible. J-I = Juvenile independent: Out of nest, foraging on own. Tail feathers nearly fully emerged, beginning to show some yellow at base of lower mandible. U = Unknown: Bird heard only. No visual confirmation of age class but, because of the type of vocalizations, these are assumed to be adult birds	
Habitat	C = Cottonwood Canopy: Manicured environment with even-aged stands of mature cottonwood trees 50-80 feet in height. D = Deciduous understory: Manicured environment with orchard-like stands of non-native Arizona ash, locust sp. trees 20-30 feet in height. M = Mesquite dominated: Continuous dense stands of mature honey mesquite trees 20-30 feet in height with full canopy and strong horizontal limb development. T = Thicket: Dense mixed thickets of brushy honey mesquite, acacia sp. tamarisk, other woody shrubs, often bordering manicured fields.	
Vocals	1 =	Kowlp: “kuk kuk kuk kaw kaw kowlp kowlp kawlp” most common call 2 = Coo: “koop koop koop....” Tinny monotone cooing repeated at varying length. Performed from a high perch, often in open, as part of territory/attraction display. 3 = Knocker: “kuk kuk kuk kuk...” often involving tail cocking or pumping, especially near nest or when approaching another cuckoo. 4 = Kawlp: “kawlp kawlp kawlp...” Lower, quieter than #1, often near nest or mate. 5 = Other: Nest calls, low quiet knocks, quiet gulps, coos etc.

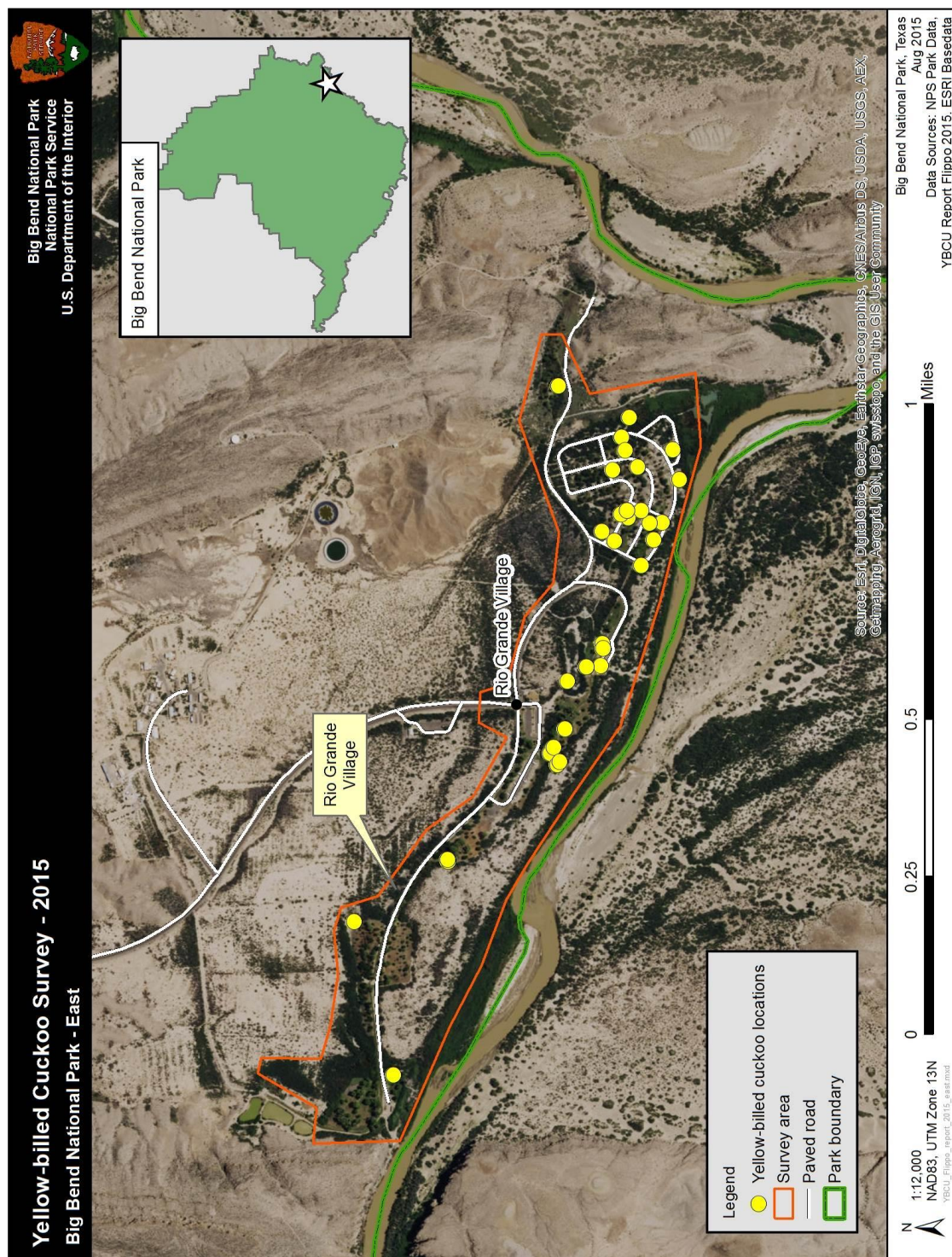
Activity	B = Begging: Dependent juvenile begging and feeding from adult. DH = Display – High: Male on high perch, performing call #2 (coo) DL = Display – Low: Both male and female performing call #3 (knock) with tail cocking / pumping when approaching mate or nest. F = Foraging: Squirrel – like movement through foliage, gleaning for prey or sitting quietly at perch, searching for prey, then quick pounce. Fp = Foraging – prey identified: Observer able to see and identify prey item. Described in notes. FC = Food Carry: Adults carrying prey repeatedly to same location or direction. Fd = Feeding: Adult feeding juvenile or nestling. N = Nesting: Adult sitting on nest. NM = Nesting material: Adult observed carrying nest material. P = Perched: Adult or juvenile at perch for several minutes. Pr = Preening
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Map: Survey results, west side of Big Bend National Park.



Status of western yellow-billed cuckoo (Coccyzus americanus occidentalis) in Big Bend National Park, 2015

Map: Survey results, east side of Big Bend National Park.



Status of western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) in Big Bend National Park, 2015

Appendix A: Survey data

Yellow-Billed Cuckoo Survey - Rio Grande Village									
Survey 1 - 6/18/2015 - 06:30 -11:30									
Bird	Location: Start/End	Time: Start/End	Observed	Age Class	Habitat	Vocalization	Activity	Notes	
#1	CG: E.698698 N.3229675 E.698642 N.3229609	6:45 -7:41	S, H	A	C, D	1, 3	Fp,FC,P	Prey = cicadas, dragonfly. Paired w/ bird #2. Photo.	
#2	CG: E.698687 N.3229588 E.698642 N.3229609	7:18 -7:41	S, H	A	C, D	3, 2	DH	Paired with bird #1.	
#3	CG: E.698664 N.3229742 E.698820 N.3229715	7:46 - 8:52	S, H	A	C, D, T	4, 2, 1	Fp, DH, F	Prey = cicada. Photo.	
#4	Group CG #C: E.698365 N.3229739	9:40 - 9:45	S, H	A	C, T	1	P	Flew out of sight.	
#5	SW corner of store parking lot E.698096 N.3229875	10:10 - 10:15	H	U	C	1		Probable adult	
#6	SE end of Old Overflow E.697667 N.3230376	10:47 - 10:50	S, H	A	T	3, 4	F		
#7	CBHA Nest Site: E.697820 N.3230136	11:20 - 11:21	S, H	A	C	4	In Flight		
#8	CBHA Nest Site: E.697820 N.3230136	11:20 - 11:21	S, H	A	C	3	In Flight		
Survey 2 - 6/26/2015 - 06:30 -11:30									
Bird	Location: Start/End	Time: Start/End	Observed	Age Class	Habitat	Vocalization	Activity	Notes	
#1	CG: E.698707 N.3229694 E.698716 N.3229678	6:32 - 8:29	S,H	A	C,D	3,4	F,Fp,FC,Fd	prey = cicada, katydid. Paired with bird #2.	
#2	CG: E.698685 N.3229620 E.698576 N.3229641	6:50 - 8:24	S,H	A	C,D	1,3,4	F,Fp,FC,Fd?	prey = cicada. Paired with bird #1.	
#3	CG: E.698873 N.3229560 E.698828 N.3229650	7:42 - 7:56	S,H	A	D	1	F		

#4	CG: E.698716 N.3229678 E.698716 N.3229642	8:00 - 8:26	S	J-d	D		B, Pr, P	Fed by bird #1, possibly #2. Photo.
#5	SW corner of store parking lot E.698096 N.3229875	8:46 - 8:59	S,H	A	C	3	P, NM	carrying dried mesquite leaf. Photo.
#6	SW corner of store parking lot E.698068 N.3229856	8:59	H	U	T	4		Probable adult
#7	Group CG #C: E.698318 N.3229782 E.698320 N.3229745	9:05 - 9:30	S,H	A	C,D,T	1	F,FC,Fd?	Following juvenile #9
#8	Group CG #C: E.698377 N.3229741 E.698377 N.3229741	9:13 - 9:32	S,H	A	C,D,T	3	F,FC,Fd?	
#9	Group CG #C: E.698318 N.3229782 E.698377 N.3229741	9:25 - 9:31	S	J-d	D,T,C		F	Attended by bird #7. Fed by both #7 & #8?
#10	CBHA Nest Site: E.698365 N.3229739	9:50 - 10:00	H	U	C,D	1,4		Probable adult
#11	CBHA Nest Site: E.697825 N.3230137	9:55	H	U	C	3		Probable adult
#12	Daniels Ranch: E.697275 N.3230275	10:12 - 10:32	S,H	A	C, D, T	1	F,Fp,P	Prey = Cicada.
Survey 3 - 7/6/2015 - 06:30 - 11:30								
Bird	Location: Start/End	Time: Start/End	Observed	Age Class	Habitat	Vocalization	Activity	Notes
#1	CG: E.698905 N.3229692 E.699035 N.3229854	6:49 - 7:45	S,H	A	D,T	1,2	DH	Paired with bird #2. Photo
#2	CG: E.698871 N.3229682 E.698954 N.3229672	6:50 - 7:45	S,H	A	D,T,C	3		Paired with bird #1
#3	CG: E.698796 N.3229544	8:28 - 8:45	S	A	D,T		F,Fd	Feeding bird #4
#4	CG: E.698796 N.3229544	8:28 - 8:45	S	J-d	D,T		B	
#5	CG: E.698639 N.3229710	9:00 - 9:03	S	A	C		F,P	Photo.

#6	CG : E.698639 N.3229710 E.698716 N.3229678	9:05 - 9:25	S,H	J-I	C,D	5	F,Fp,P,Pr	Prey = walkingstick. Call = low, quiet knocks. Photo.
#7	Group CG #D: E.698159 N.3229837 E.698281 N.3229831	9:33- 9:45	S,H	A	C,T	3	P,F	
#8	SW corner of store parking lot E.698111 N.3229865 E.698075 N.3229851	11:15 - 11:17	S	J-I?	D,T		F	Did not see or hear any adult.

Yellow-Billed Cuckoo Survey - Cottonwood/Blue Creek									
Survey 1 - 6/19/2015 - 06:30 - 11:30									
Bird	Location: Start/End	Time: Start/End	Observed	Age Class	Habitat	Vocalization	Activity	Notes	
#1	E. 643462 N. 3224199	6:35 - 6:45	H	U	M	1		Probable adult.	
#1?	E. 643079 N. 3224344	8:45 - 8:50	H	U	M	4		Probable adult.	
#2	E. 643605 N. 3224320	9:30 - 10:30	S,H	A	M	3,4	F,Fp,P	Prey = Katydid	
	E. 643555 N. 3224260								
#3	E. 643536 N. 3224241	10:15 - 10:30	S,H	A	M	1,2	DH		
Survey 2 - 6/27/2015 - 06:30 - 11:30									
Bird	Location: Start/End	Time: Start/End	Observed	Age Class	Habitat	Vocalization	Activity	Notes	
#1	E. 643472 N. 3224201	6:55 - 8:03	H	A	M	1,4	F?	Birds #1 & #2 concurrently calling.	
	E. 643486 N. 3224222								
	E. 643441 N. 3224225	8:40 - 8:50	S,H	A	M	5,1	F	5= very quiet kuk-kuk-kuk	
#2	E. 643521 N. 3224234	7:40 - 8:22	H	A	M	1,3	F?		
	E. 643495 N. 3224237								
	E. 643441 N. 3224225	8:42 - 8:57	S,H	A	M	4,5	F,P,DL	5= quiet, swallowed gulp, interspersed with quiet coos.	
#1/2?	E. 643441 N. 3224225	10:07 - 10:19	S,H	A	M	1	F		
Survey 3 - 7/7/2015 - 06:30 - 11:30									
Bird	Location: Start/End	Time: Start/End	Observed	Age Class	Habitat	Vocalization	Activity	Notes	
#1	E. 643441 N. 3224225	7:15 - 10:00	S,H	A	M	3,1	F		
	E. 643380 N. 3224266								
#2	E. 643413 N. 3224259	8:25 - 10:00	S,H	A	M	4,5	F,Fd,N	Adult on nest. At least one nestling observed. Photo.	
#3	CG: E. 643649 N. 3224122	11:05 - 11:10	S,H	A	C,M	1	In Flight		

Yellow-Billed Cuckoo Survey - Mesquite I									
Survey 1 - 6/21/2015 - 06:30 - 11:30									
Bird	Location: Start/End	Time: Start/End	Observed	Age Class	Habitat	Vocalization	Activity	Notes	
#1	E.644409 N.3223604	6:45 - 7:34	H	U	M	1,2	DH	Probable adult.	
#2	E.644512 N.3223494	6:48 - 6:50	H	U	M	1		Probable adult.	
Survey 2 - 6/29/2015 - 06:30 - 11:30									
Bird	Location: Start/End	Time: Start/End	Observed	Age Class	Habitat	Vocalization	Activity	Notes	
#1	E.644380 N.3223546 E.644381 N.3223535	7:01 - 7:45	S,H	A	M	1,3	F,P		
#2	E.644435 N.3223449 E.644418 N.3223505	8:20 - 10:15	S,H	A	M	3	F,P		
Survey 3 - 7/9/2015 - 06:30 - 11:30									
Bird	Location: Start/End	Time: Start/End	Observed	Age Class	Habitat	Vocalization	Activity	Notes	
#1	E.644399 N.3223460 E.644516 N.3223434	7:05 - 11:22	S,H	A	M	2,3	DH,Fp,DL,FC	Prey = Mantis. Approaches but will not sit on nest. Photo. Distraction display?	
#2	E.644455 N.3223389 E.644516 N.3223434	7:35 - 11:22	S,H	A	M	3,5	Fp,FC,P,DL,N	5= quiet, swallowed gulp, interspersed with quiet coos. Prey = Mantis. Bird sat, frozen, for a long time. Adult on nest with at least one nestling. Photo.	

Yellow-Billed Cuckoo Survey- Rte.16-SEC Trail Parking Lot - Alamo Creek									
Survey 1 - 7/10/2015 - 06:30 - 11:30									
Bird	Location: Start/End	Time: Start/End	Observed	Age Class	Habitat	Vocalization	Activity	Notes	
#1	SEC Overlook E.635600 N.3227630	6:47 - 6:54	H	A	M	1			
#2	Dorgan - Sublett Trail E.638089 N.3226165	7:48 - 8:05	H	A	M	3			
#3	Old Grand Canyon Farm E.638480 N.3225901 E.638596 N.3225956	8:20-9:20	S,H	A	M	2	DH	Bird 3 paired with Bird 4.	
#4	Old Grand Canyon Farm E.638480 N.3225901 E.638596 N.3225956	8:20 - 9:20	S,H	A	M	1,4	F,Fp,P	Prey = Mantis. Photo.	
#5	Old Grand Canyon Farm E.638746 N.3226077 E.638680 N.3226097	9:20 - 10:15	H	A	M	4,1		Bird 5 paired with Bird 6.	
#6	Old Grand Canyon Farm E.638746 N.3226077 E.638680 N.3226097	9:30 - 10:15	S,H	A	M	1	F		
#7	E.640429 N.3226548	10:38 - 10:42	H	A	M	1			
#8	Across River from La Coyota in Mex E.640882 N.3225907	10:55 - 11:00	H	A	M	1			
#9	La Coyota/Alamo Creek E.641087 N.3225670	11:16 - 11:30	H	A	M	3			

Appendix B: Other Birds Observed

Yellow-Billed Cuckoo Survey - Rio Grande Village				
Other birds observed				
Species	Survey 1 - 6/18/2015	Survey 2 - 6/26/2015	Survey 3 - 7/6/2015	Notes
wood duck			X	unusual summer record
scaled quail			X	
green heron		X		
black vulture	X	X	X	
turkey vulture	X	X	X	
common black-hawk	X	X	X	nestling
grey hawk	X	X	X	
Swanson's hawk			X	
red-tailed hawk		X		
American coot	X			
Eurasian collared dove	X	X	X	
white-winged dove	X	X	X	
mourning dove	X	X	X	
Inca dove	X	X	X	
common ground-dove		X	X	
greater roadrunner	X	X	X	
lesser night hawk	X	X	X	
common poorwill	X			
black-chinned hum.	X	X	X	
golden-fronted woodp.	X	X	X	
ladder-back woodp.	X	X	X	
peregrine falcon			X	juvenile pair
Say's phoebe	X			
black phoebe		X	X	
vermillion flycatcher	X	X	X	
ash-throated flycatcher	X	X	X	
brown-crested flycatcher	X	X	X	
western kingbird			X	
Bell's vireo	X	X	X	
common raven	X		X	
n.rough-winged swallow		X		
barn swallow			X	
verdin	X	X	X	
Carolina wren	X			
cactus wren	X	X		

black-tailed gnatcatcher	X	X	X	
crissal thrasher	X			
Northern mockingbird	X	X	X	
common yellowthroat		X	X	
yellow-breasted chat	X	X	X	
black-throated sparrow	X	X	X	
summer tanager	X	X	X	
Northern cardinal	X	X	X	
pyrrhuloxia	X	X	X	
blue grosbeak	X	X	X	
painted bunting	X	X	X	
great-tailed grackle		X		
bronzed cowbird	X		X	
brown-headed cowbird	X	X	X	
orchard oriole	X	X	X	
house finch	X	X	X	

Yellow-Billed Cuckoo Survey - Cottonwood/Blue Creek

Other birds observed

Species	Survey 1 - 6/19/2015	Survey 2 - 6/27/2015	Survey 3 - 7/7/2015	Notes
scaled quail		X		
black vulture	X	X	X	
turkey vulture	X	X	X	
gray hawk	X	X	X	1 fledgling 1 nestling
Swanson's hawk			X	
eurasion collared dove	X	X	X	
white-winged dove	X	X	X	
mourning dove	X	X	X	
Inca dove	X	X	X	
common ground-dove	X	X	X	
greater roadrunner	X	X	X	
great horned owl	X	X	X	2 juveniles with 2 adults
elf owl	X			
lesser night hawk	X	X	X	
common poorwill	X			
black-chinned hum.	X	X	X	
golden-fronted woodp.	X	X	X	
ladder-back woodp.	X	X	X	
northern flicker		X		
black phoebe	X	X	X	
vermillion flycatcher	X	X	X	
ash-throated flycatcher	X	X	X	
brown-crested flycatcher	X	X	X	
Couch's kingbird	X	X	X	
western kingbird	X	X	X	
loggerhead shrike		X		
Bell's vireo	X	X	X	
n.rough-winged swallow	X			
verdin	X	X	X	
cactus wren		X		
black-tailed gnatcatcher	X	X	X	
crissal thrasher			X	
Northern mockingbird	X	X	X	
Lucy's warbler	X	X		
yellow-breasted chat	X	X	X	

Status of western yellow-billed cuckoo (Coccyzus americanus occidentalis) in Big Bend National Park, 2015

black-throated sparrow	X	X	X	
Cassin's sparrow		X		
summer tanager	X	X	X	
Northern cardinal	X	X	X	
pyrrhuloxia	X	X	X	
blue grosbeak	X	X	X	
painted bunting	X	X	X	
brown-headed cowbird	X	X	X	
orchard oriole	X	X	X	
hooded oriole			X	
house finch	X	X	X	
lesser goldfinch			X	

Yellow-Billed Cuckoo Survey - Terlingua Creek			
Other birds observed			
Species	Survey 1 - 6/20/2015	Survey 2 - 6/28/2015	Notes
scaled quail	X	X	
black vulture		X	
turkey vulture	X	X	
common black-hawk	X	X	nestling
gray hawk	X	X	pair
Swanson's hawk	X	X	
zone-tailed hawk	X	X	pair
white-winged dove	X	X	
mourning dove	X	X	
Inca dove	X	X	
common ground-dove	X	X	
greater roadrunner	X	X	
lesser night hawk	X	X	
common poorwill	X		
black-chinned hum.		X	
golden-fronted woodp.	X	X	
ladder-back woodp.	X	X	
black phoebe	X	X	
vermillion flycatcher	X	X	
ash-throated flycatcher	X	X	
western kingbird	X	X	
loggerhead shrike	X	X	
Bell's vireo	X	X	
verdin	X	X	
cactus wren	X	X	
black-tailed gnatcatcher	X	X	
crissal thrasher		X	
Northern mockingbird	X	X	
phainopepla	X		
yellow-breasted chat	X	X	
black-throated sparrow	X	X	
summer tanager	X	X	
Northern cardinal	X	X	
pyrrhuloxia	X	X	
blue grosbeak	X	X	
painted bunting	X	X	
brown-headed cowbird	X	X	
orchard oriole	X	X	
house finch	X	X	
lesser goldfinch	X	X	

Yellow-Billed Cuckoo Survey - Mesquite 1

Other birds observed

Species	Survey 1 - 6/21/2015	Survey 2 - 6/29/2015	Survey 3 - 7/9/2015	Notes
black vulture			X	
turkey vulture	X	X	X	
gray hawk		X		
eurasion collared dove	X			
white-winged dove	X	X	X	
mourning dove	X	X	X	
Inca dove	X			
common ground-dove	X			
greater roadrunner	X	X	X	
w. screech-owl			X	
lesser night hawk	X	X	X	
ladder-back woodp.	X	X	X	
ash-throated flycatcher	X	X	X	
western kingbird	X			
Bell's vireo	X	X	X	
n.rough-winged swallow			X	
common raven	X			
verdin	X	X	X	
cactus wren	X			
black-tailed gnatcatcher	X	X	X	
crissal thrasher			X	
Northern mockingbird	X	X		
Lucy's warbler	X		X	
yellow-breasted chat		X	X	
black-throated sparrow		X	X	
summer tanager	X	X	X	
Northern cardinal	X	X	X	
pyrrhuloxia	X	X	X	
blue grosbeak	X	X	X	
painted bunting	X	X	X	
brown-headed cowbird	X	X	X	
house finch		X	X	
lesser goldfinch	X	X		

Yellow-Billed Cuckoo Survey - Rte. 16-SEC to Alamo Creek

Other birds observed

Species	Survey 1 - 6/20/2015	Notes
scaled quail	X	
black vulture	X	
turkey vulture	X	
golden eagle	X	immature
white-winged dove	X	
mourning dove	X	
common ground-dove	X	
greater roadrunner	X	
lesser night hawk	X	
black-chinned hum.	X	
ladder-back woodp.	X	
vermillion flycatcher	X	
ash-throated flycatcher	X	
Bell's vireo	X	
common raven	X	
n.rough-winged swallow	X	
verdin	X	
black-tailed gnatcatcher	X	
Northern mockingbird	X	
yellow-breasted chat	X	
black-throated sparrow	X	
summer tanager	X	
Northern cardinal	X	
pyrrhuloxia	X	
blue grosbeak	X	
painted bunting	X	
brown-headed cowbird	X	
house finch	X	
lesser goldfinch	X	