Survey Protocol for the Yellow-billed Cuckoo

Western Distinct Population Segment

Halterman, MD, MJ Johnson, JA Holmes, and SA Laymon. 2016. A Natural History Summary and Survey Protocol for the Western Distinct Population Segment of the Yellow-billed Cuckoo: US Fish and Wildlife Techniques and Methods, 45 pp.

Presented by Jenna and John Stanek

Southern Sierra Research Station
Research for Conservation of Biological Diversity

based on material from the USFWS, Southern Sierra Research Station, Bureau of Reclamation Boulder City Office, Albuquerque Area Office & Denver Technical Service Center, and USGS

Objectives of this protocol

- ✓ Determine **presence** of YBCUs at a site
  - Using standardized call-playback surveys
  - *Estimate* breeding status
  - Facilitate uniform reporting

- × **Not** designed to measure *exact* distribution, abundance, breeding status, habitat use/quality
  - Require many more visits and observation

Pre-survey Preparation

- Attend a USFWS-approved workshop ✓ ☺
- Permits and permissions required: Federal, State, Tribal, BLM, USFS, Private
- Review site-specific data/reports
- Equipment (e.g. mp3, speaker, GPS, etc.)
- Study field guides, photos, drawings, calls – be familiar with appearance, behavior
- Visit known breeding sites if possible
- Visit survey sites **before** first survey

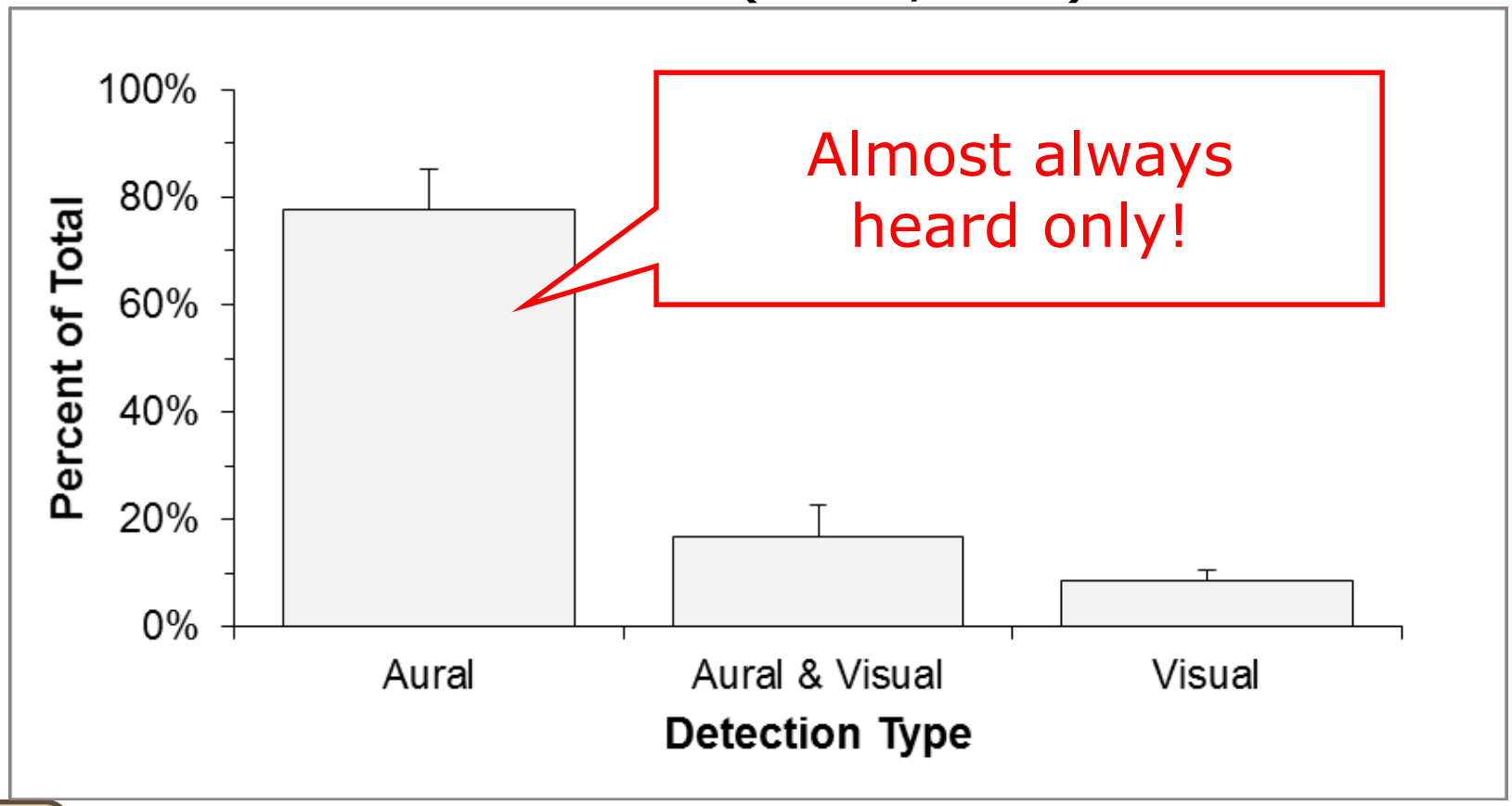
<u>Internet Resources:</u>
Reclamation
LCR MSCP
SSRS
USFWS
USGS

Pre-survey Preparation

- Protocol based on visual or aural ID
- Must be able to hear and recognize all calls: contact, coo, alarm
- Very likely to hear, but not see a cuckoo during surveys

Survey Detections by type

2008–2012 LCR (n=1,052) - SSRS

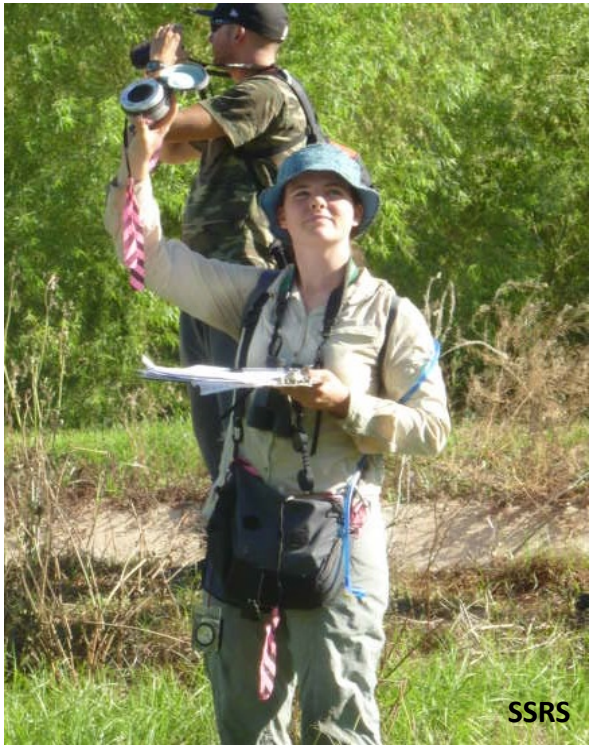


Required Equipment

- Maps/Aerial Photos
- Broadcast Equipment
  - MP3 with contact calls
  - Speakers (70 db)
  - Back up player + batteries
- Survey Forms
- Binoculars
- GPS Unit
- Compass
- Pens, pencils
- Time Device (watch, GPS, phone)
- Clipboard or Electronic Device

Optional Equipment

- Range Finder
- Cell phone
- Radio
- Camera
- Flagging/Marker
- Rite-in-rain

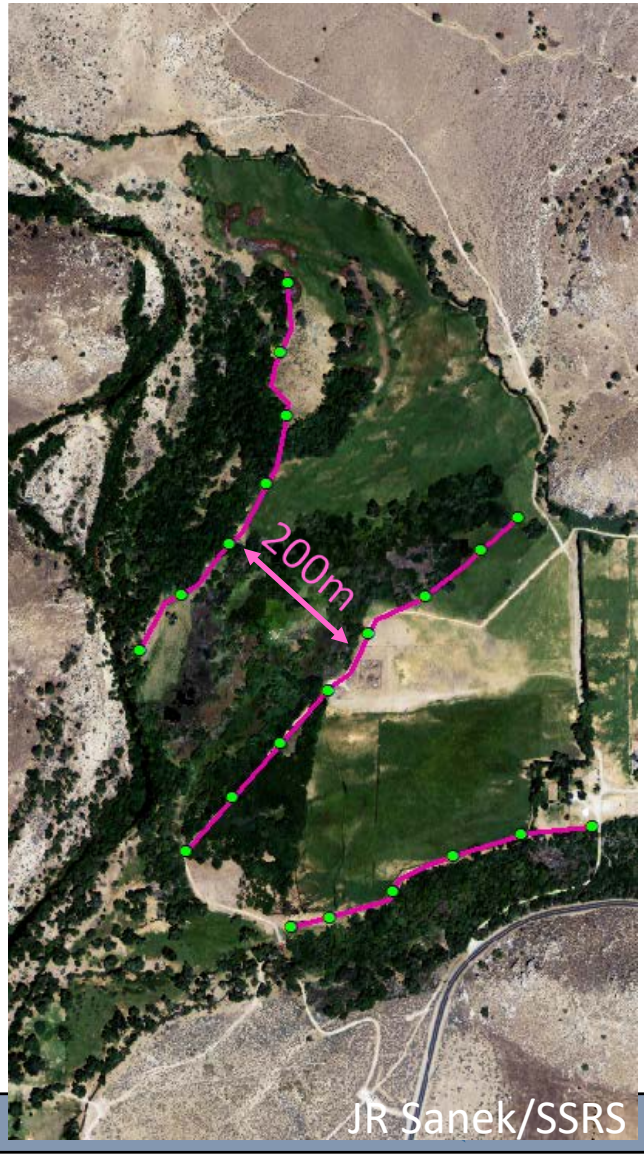


Pre-survey Preparation

- Identify suitable habitat to survey
  - Patches of early to mature native or mixed native/exotic riparian forest ≥5 ha / 12.5 acres
  - ≥20 ha / 50 ac more suitable
- Riparian forest can change quickly

Pre-survey Preparation

- Map survey area
- Identify access points
- Determine transect spacing, start and stop locations
  - Import to GPS or Phone
- Can skip unsuitable areas



Pre-survey Preparation

- Determine order to survey sites
- Survey adjacent sites same day
- Determine travel time to reach transect start by car / foot
- Don’t survey other species during YBCU survey

Pre-survey Preparation

Conduct surveys from edge or within habitat?

- From within:
  - Responsiveness/detectability related to distance
  - If patch width >200 m
- From edge:
  - Easier: walk further in a morning
  - Greater visibility: easier to detect
  - ≥200 m: survey entire perimeter

Survey Schedule, Timing

Four required surveys, every 12 – 15 days

Survey Period	Required?	Dates (+/- 3 days)
Pre-season	Optional	Late May - June 14
1	Required	June 15 - June 30
2	Required	July 1 - July 31
	Required	
3	Required	August 1 - August 15
Post-season	Optional	August 16 - September

Survey Methods

- Survey from ~dawn
  - As soon as safe to walk and can see enough to ID a YBCU
- Until 11:00 am
  - Or 40°C (104°F)
- Stop if too windy (>16 mph), noisy, or raining

*** Use Common Sense ***

Survey Methods

1) Arrival to site: listen/watch **silently** a few minutes – start filling out data sheet

2) Arrival to each point: listen/watch **silently** 1 minute

3) Broadcast 5 contact calls, each spaced 1 minute apart; listen/watch for YBCUs during/after **each** broadcast

4) No detection → Continue 100 m along transect, repeat

Survey Methods: No detection

** Wait 1 minute before & after playing! **

1 min (1 min) x5

1 min (1 min) x5

1 min (1 min) x5

100 m

100 m

Survey point

Survey Methods

5) YBCU detected:

- Stop broadcast, try to see it if possible, then record data:
  - Waypoint (UTMs), time
  - Bearing / distance to bird
  - Bird #: Detections >300 m apart ~ separate individuals
  - Broadcast # when detected (0-5)
  - Detection type, call, behavior, comments

6) Move 300 m from bird along transect and continue
   - limit duplicate detections and harassment

Survey Methods: Detection

1 min (1 min) x5

300 m

1 min (1 min) x3

Observe,
record data

Survey point

Survey Methods

7) YBCU encountered between survey points:

- Stop and record same info as for a survey point detection
- No broadcast calls!
- Move 300 m from bird along transect
- Continue with survey

**** Note: unmated females may follow surveyors great distances ****

Survey Methods: Detection between points

1 min (1 min) x5

300 m

1 min (1 min) x5

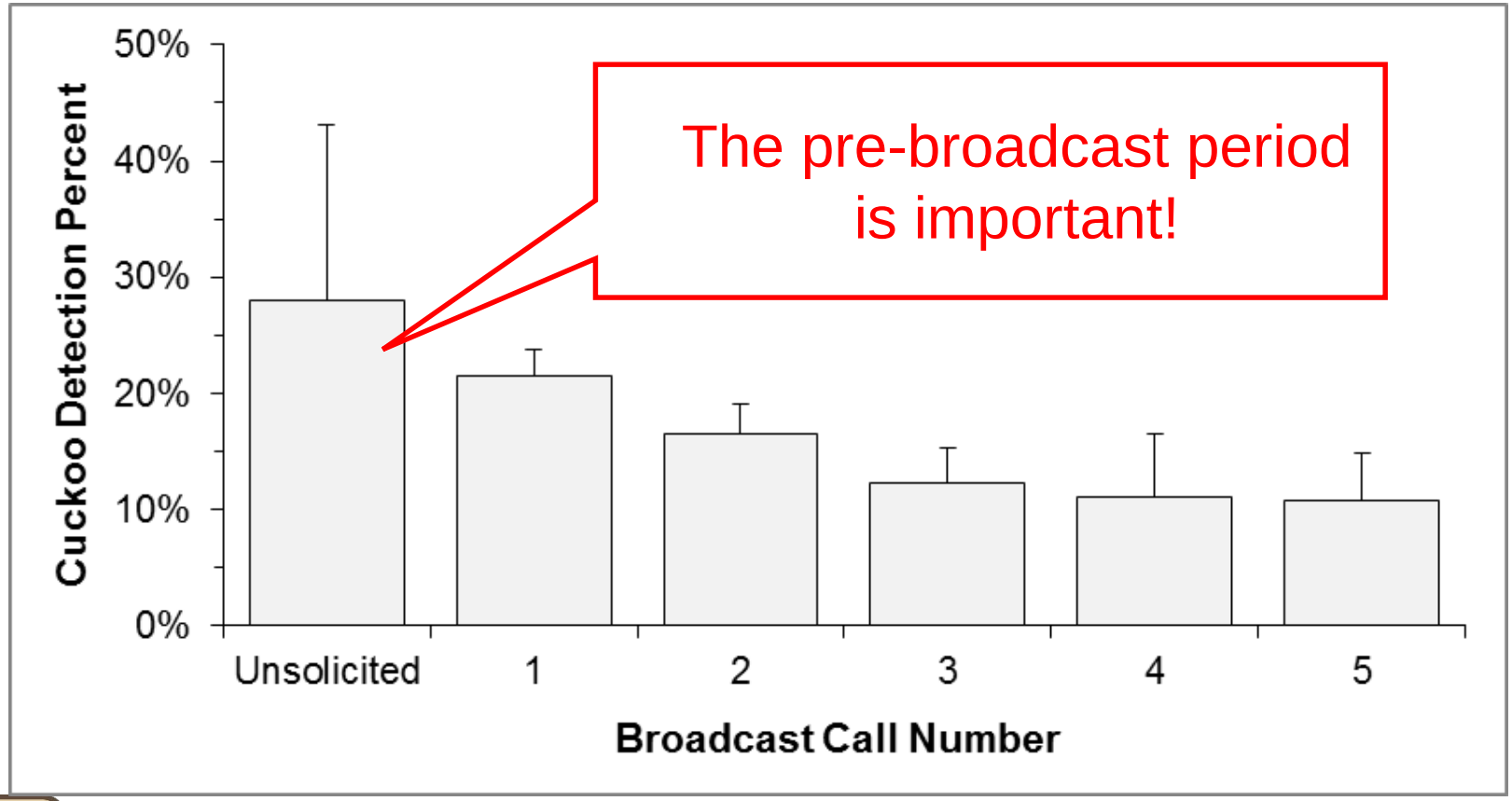
100 m

Observe, record data

Survey point

Survey Detections by Broadcast

2008 – 2012 LCR (n=1,052) - SSRS



Survey Methods

- Generally 8-15 minutes to listen for 1 minute, play 5 calls, record data, travel to next point 100 m away
- One surveyor can survey up to 20-25 points per morning

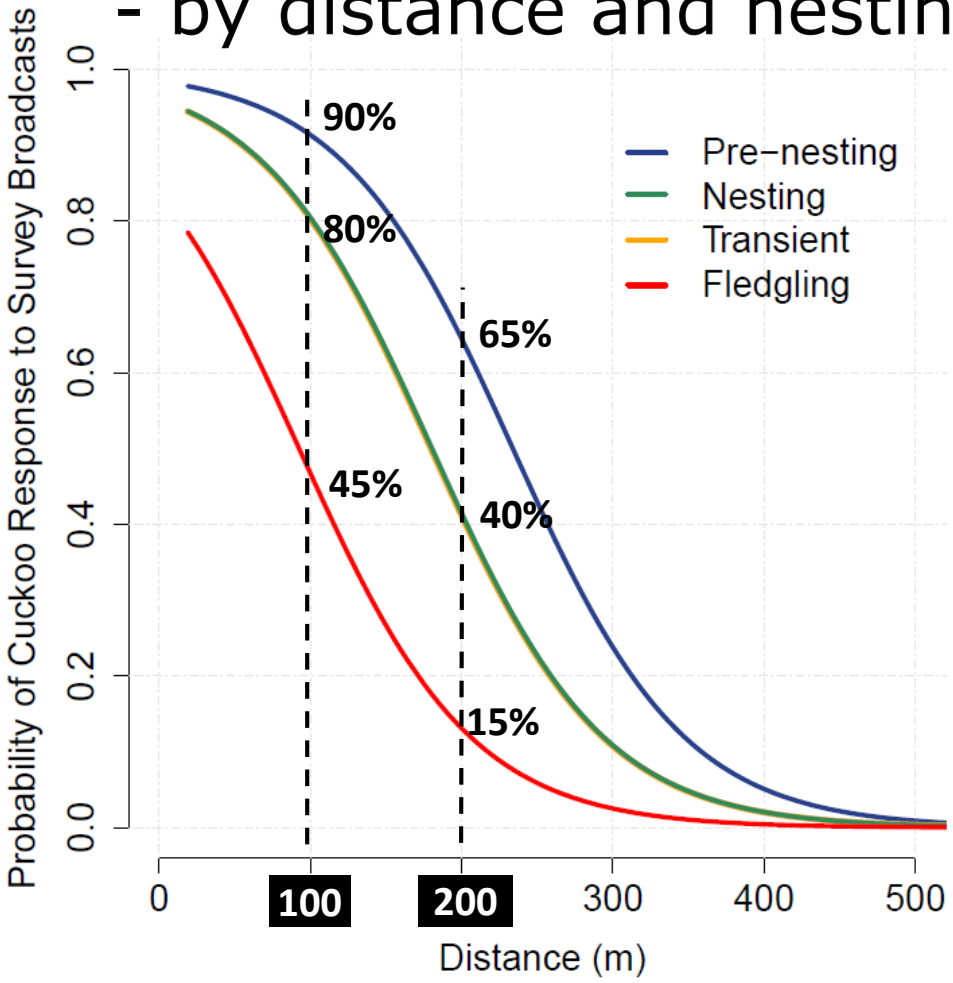
Survey Methods

8) Ensure **full coverage** of habitat

9) Complete Survey Form before leaving site!

- Detections >300 m apart during same survey usually considered separate individuals

Probability of Response
- by distance and nesting stage



The probability a YBCU responds to call-playback

SSRS radio bird study 2011-2012 LCR

N =

- 27 YBCUs
- 11 surveyors
- 301 response observations

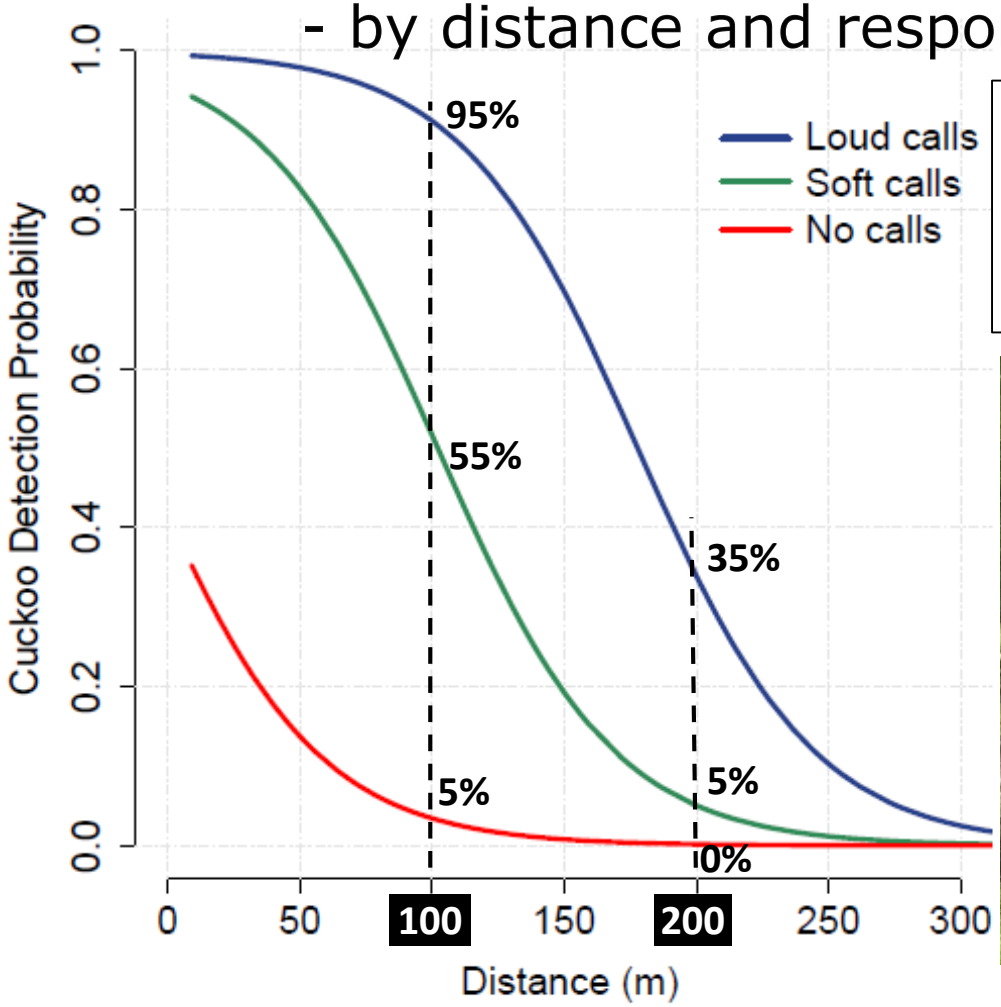
Probability of Detection

- by distance and response type

SSRS radio bird study 2011-2012 LCR

N =

- 27 YBCUs
- 11 surveyors
- 149 responses

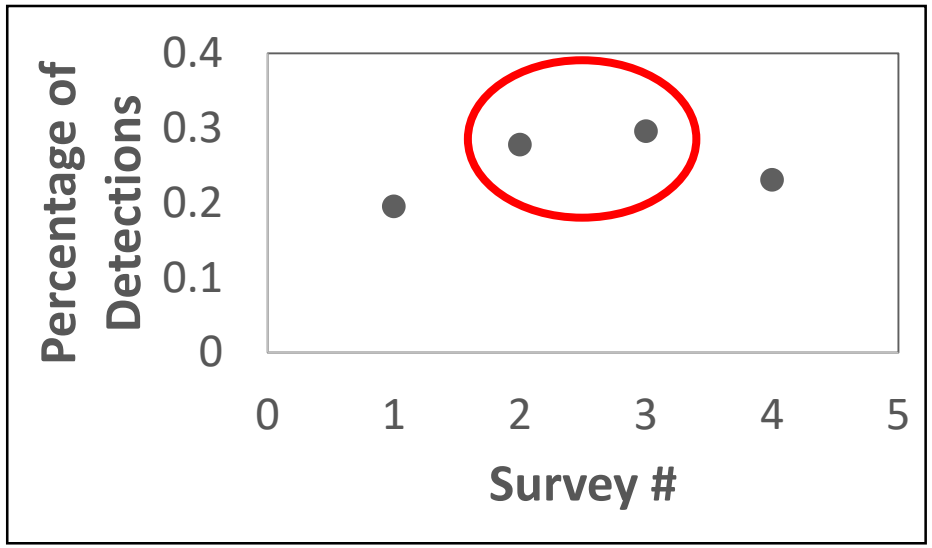


The probability a surveyor detects a responding YBCU

Interpreting Survey Results

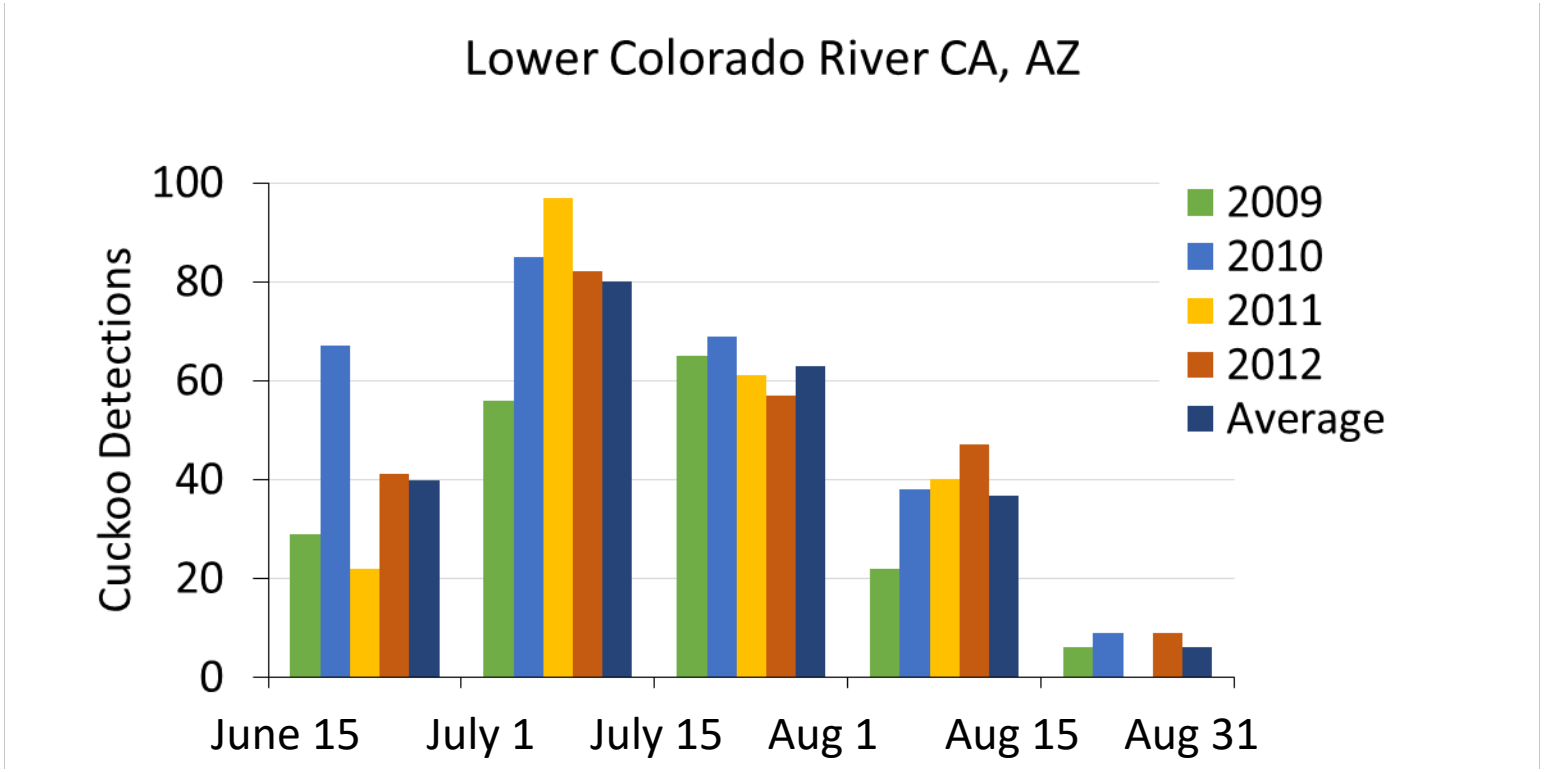
Seasonal Detection Patterns

Detection Percentage by Survey, New Mexico 2009-2013 (n=1,076 detections)



BOR, Albuquerque Area Office and Denver Technical Service Center

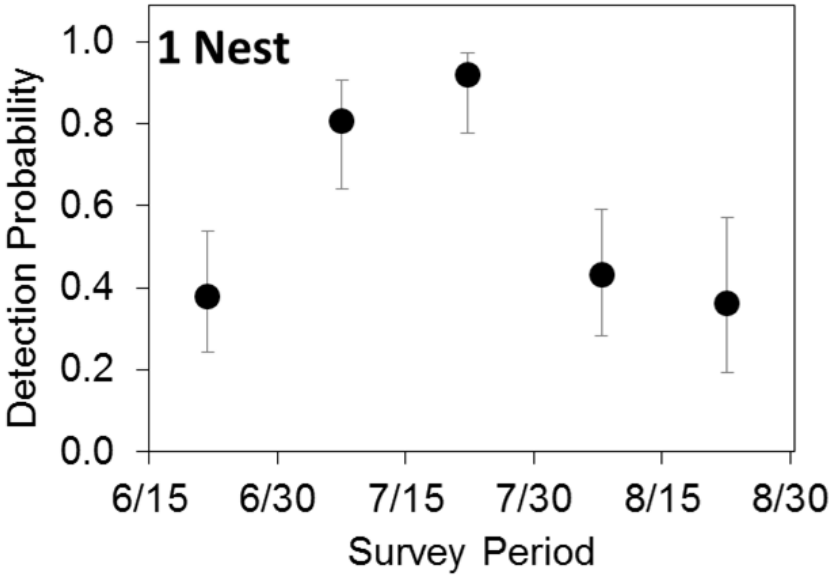
Interpreting Survey Results
SSRS



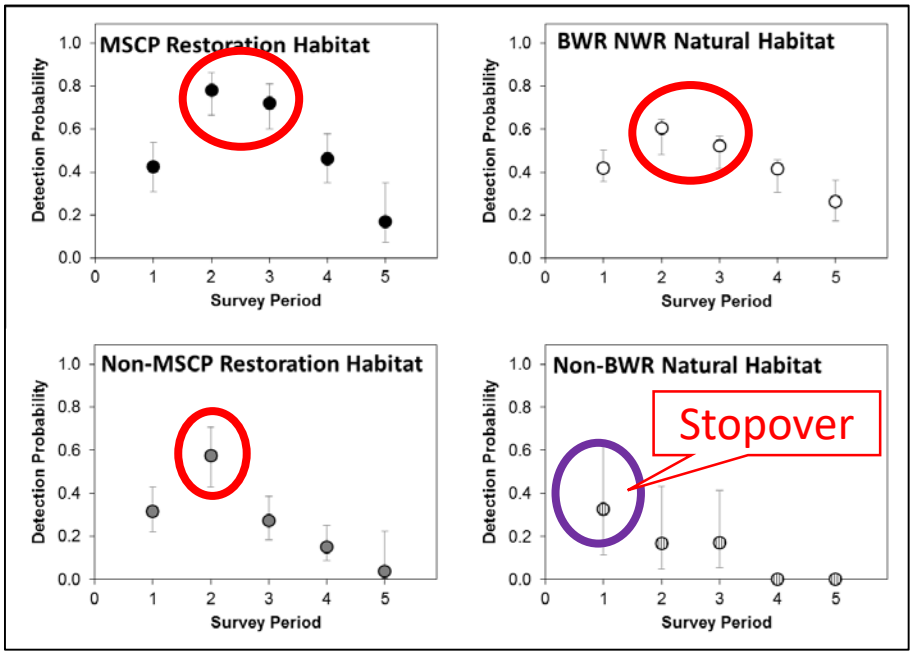
Interpreting Survey Results

Seasonal Detection Patterns

Detection Probability by Survey, LCR 2008-2012, (n=26)



Detection Probability by Survey, Lower Colorado River 2008-2012 (n=1,052)



Southern Sierra Research Station/LCR MSCP

Avoiding Adverse Impacts

- No unnecessary playback
- No excessive flagging
- Move cautiously within habitat
- Avoid known or suspected nests
  - Only nest-search/monitor as part of focused research activity
  - **Nest monitoring permit required -** federal and state
  - Leave area if "knocking" etc.

Avoiding Adverse Impacts

- No playback in presence of predators
  - E.g. accipiters, ravens, crows, jays, magpies, owls …
  - Wait until they leave, or move on toward next point
- Don’t spread invasive plants and animals

Jamaica Bay Wildlife Sanctuary, NY, June 19 2016

Avoiding Adverse Impacts

If you find a nest:

- Move away slowly, carefully
- When a safe distance away, note the nest and general location
- Flag inconspicuously >10 m from nest, remove by end of season
- Don’t create a “dead end” trail
- Avoid the area

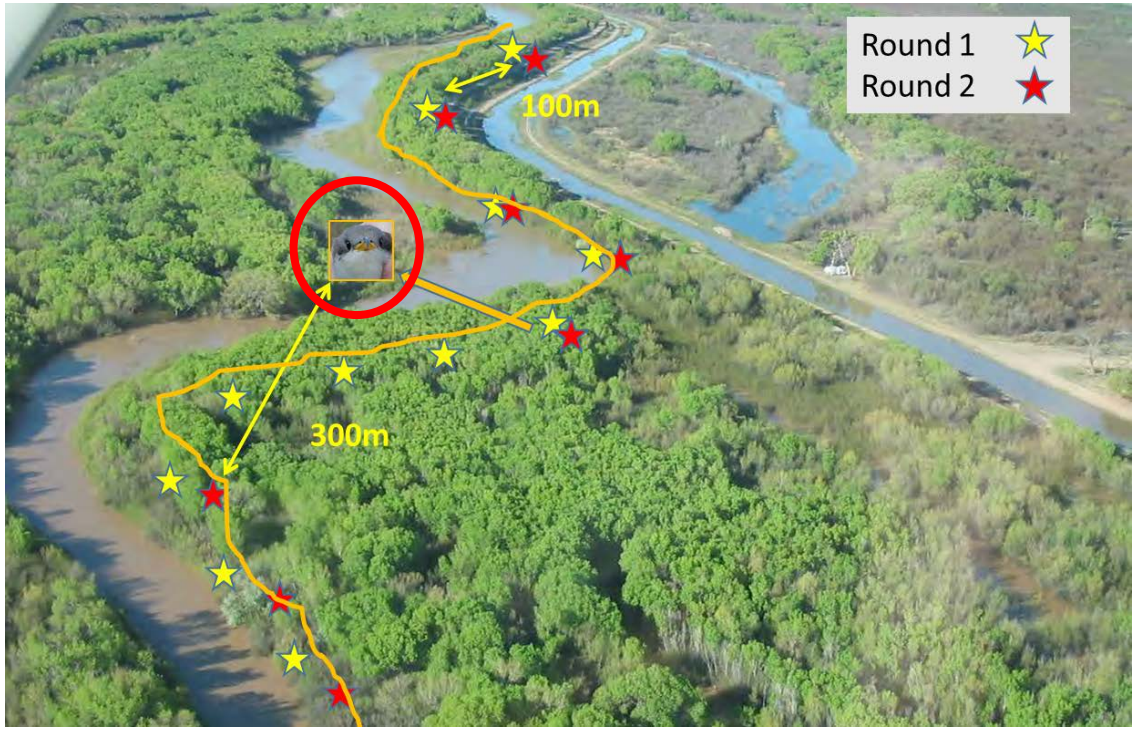
Interpreting Survey Results

- Accurate abundance, breeding status difficult without additional monitoring
  - Easy to over-count, under-count territories
- Plot detections on a map (GIS), evaluate 'clumps' to estimate breeding territories
- Individual territories *usually* ≥300 m apart
- "Best biological opinion"

Interpreting Survey Results

Possible Breeding Territory (PO)

- Detections in an area during 2 surveys (at least 12 days apart)
- No other evidence of breeding



Interpreting Survey Results

Probable Breeding Territory (PR)

- Detections in an area on at least 3 surveys (all at least 12 days apart)

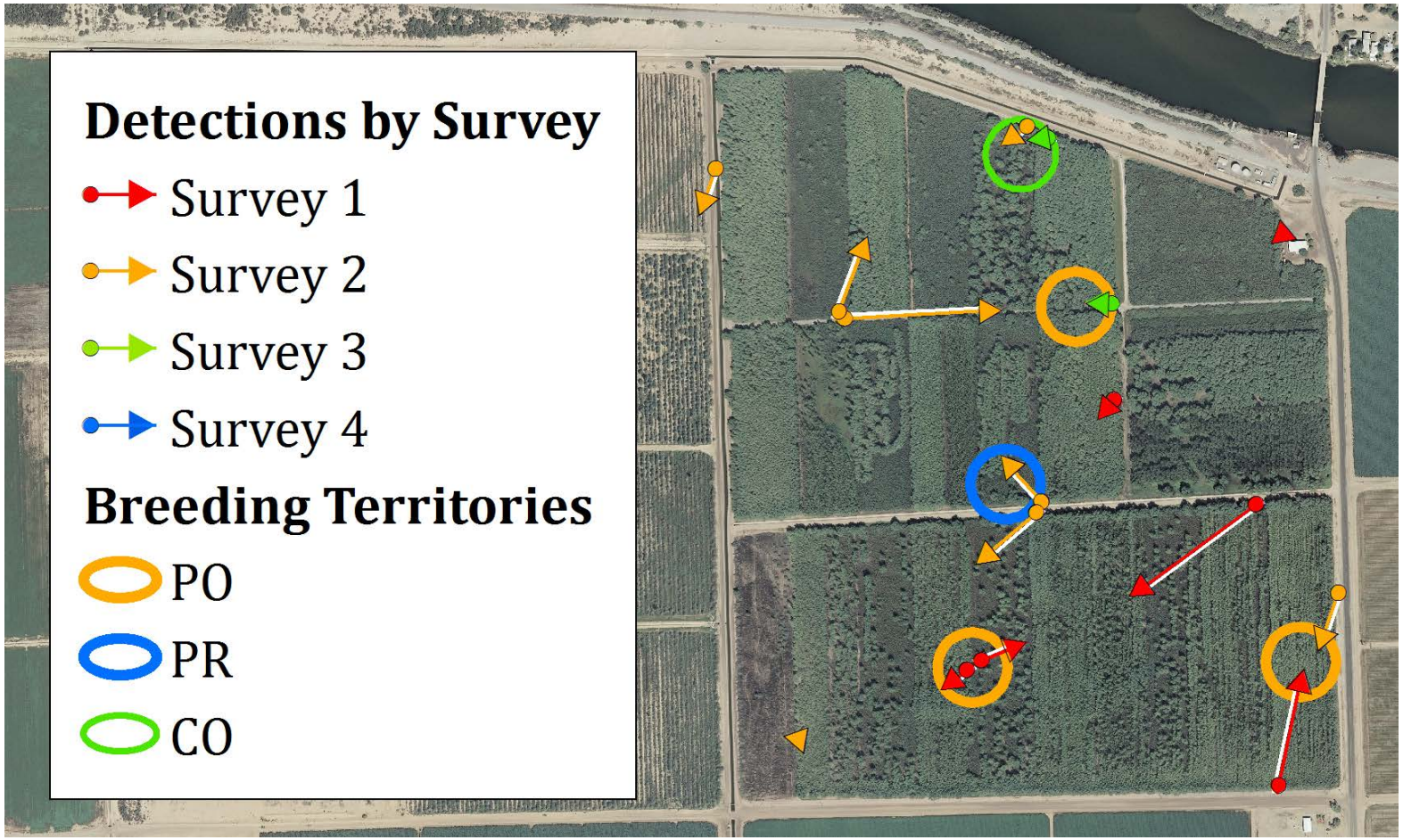
- Or **PO**ssible territory + observation of:
  - Food or stick carry
  - Traveling as a pair
  - Exchanging **contact** calls

Interpreting Survey Results

Confirmed Breeding Territory (CO)

- Copulation
- Multiple food or stick carries
- Distraction display
- Fledgling
- Nest

Interpreting Survey Results



SSRS

Reporting

- Permit requirement
  - Maps, detections, estimated territories, site descriptions

Benefits

- Shows population trends
- May avoid project-related impacts
- Provides historical record
- Assists species recovery

Required: Site Description Form - 1

Required Survey Forms

Yellow-Billed Cuckoo Survey Site Description Form for Electronic submission

This form is intended to provide a general descrition of the habitat surveyed at a site. More detailed vegetation analysis requires precise measurements, and is outside the scope of this survey protocol. Please check your permit for additional requirements.

Fill in the following information completely		**Date Report completed:**	
Site Name:	State:		County:
Name of Reporting Individual	Affiliation		
Phone #	Email:		
USFWS Permit #	State Permit #		

Site Coordinates:	Start: **E**		**N**	UTM Zone:
	Stop: **E**		**N**	NAD:
USGS Quad Name(s):		Length of area surveyed (in kilometers)		Elevation:

Name of nearest Creek, River, Wetland, or Lake:

Ownership: BLM Reclamation NPS USFWS USFS Tribal State Private Other (Municipal/County)

Was site surveyed in previous year? Yes No Unknown		If yes, what site name was used?	
Did you survey the same general area during each visit this year?	Yes / No	If no, summarize in comments below	
If "Yes", was the same general area surveyed this year?	Yes / No	If no, summarize in comments below	

Native/Exotic: The species in tree/shrub layer at this site are 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%)	

List up to 5 species of overstory vegetation and percent canopy cover of each species. Use scientific names. For percent cover, please use <1%; 10%, 25%, 50%, 75%, 90%, 100%.

1.	**% cover:**	**2.**	**% cover:**	**3.**	**% cover:**
4.	**% cover:**	**5.**	**% cover:**		
Average height of overstory (m)(do not include a range)			Estimated Overall Canopy Cover (percent)		

List up to 5 species of understory/shrub vegetation (not all sites will have a separate understory) and estimate percent understory cover of each species. Use scientific names. For percent cover, please use <1%; 10%, 25%, 50%, 75%, 90%, 100%.

1.	**% cover:**	**2.**	**% cover:**	**3.**	**% cover:**
4.	**% cover:**	**5.**	**% cover:**		
Average height of understory (m)(do not include a range)			Estimated Overall Cover (percent)		

Required: Site Description Form - 2

Required Survey Forms

Average height of overstory (m)(do not include a range)	Estimated Overall Canopy Cover (percent)

List up to 5 species of understory/shrub vegetation (not all sites will have a separate understory) and estimate percent understory cover of each species. Use scientific names. For percent cover, please use <1%; 10%, 25%, 50%, 75%, 90%, 100%.

1.	**% cover:**	**2.**	**% cover:**	**3.**	**% cover:**
4.	**% cover:**	**5.**	**% cover:**		

Average height of understory (m)(do not include a range)	Estimated Overall Cover (percent)

Describe adjacent habitat (e.g. upland vegetation; desert scrub; urban/residential; agriculture/orchard; oak woodland)

List up to five categories of adjacent habitat, and estimate percent cover. Use <1%; 10%, 25%, 50%, 75%, 90%, 100%.

1.	**% cover:**	**2.**	**% cover:**	**3.**	**% cover:**
4.	**% cover:**	**5.**	**% cover:**		

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.

Site Name:	Name of Reporting Individual
Phone #	Email

Attach the following: 1) Copy of USGS 7.5 minute quad/topographical map(s) of survey area, outlining survey site and location of YBCU detection; 2) Sketch or aerial photo showing site location, patch shape,openings, survey route, and location of any detected YBCU 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. Check your permits for required documentation.

Required: Seasonal Survey Summary Form

Required Survey Forms

Yellow-billed Cuckoo Survey Form

Site Name: | County: | State:

USGS Quad Name: | Elevation:

Creek, River, Wetland, or Lake Name

Site Coordinates: Start: E | N | UTM Zone:

Stop: E | N | Datum:

Ownership:

Was site surveyed in previous year? | If yes, what site name was used?

Survey # Observer(s) (Last Name, First Initial)	Date (m/d/y) 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 prior to response	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	Cuckoo#	Corrected Coordinates	
								UTM E	UTM N				UTM E	UTM N
Survey Period #1	Date:													
Observer(s):	Start:													
	Stop:													
	Total hrs:	Total:												

** Report survey data even if no detections! **

Required: Seasonal Survey Summary Form

Required Survey Forms

Yellow-billed Cuckoo Survey Form

Site Name:	PVER Phase 07				County:	Riverside				State:	CA							
USGS Quad Name:	Blythe NE									Elevation:	86							
Creek, River, Wetland, or Lake Name	Lower Colorado River																	
Site Coordinates:	Start:	E	731,861		N	3,731,804				UTM Zone:	11							
	Stop:	E	733,102		N	3,733,665				Datum:	NAD83							
Ownership:	CDFW																	
Was site surveyed in previous year?	Y				If yes, what site name was used?					PVER Phase 07								

Survey # Observer(s) (Last Name, First Initial)	Date (m/d/y) 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 prior to response	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	Cuckoo#	Corrected Coordinates	
								UTM E	UTM N				UTM E	UTM N
Survey #1	Date:													
Observer(s):	Start:													
	Stop:													
	Total hrs:	Total:												

Required: Seasonal Survey Summary Form

Required Survey Forms

Yellow-billed Cuckoo Survey Form

Site Name:	PVER Phase 07			County:	Riverside			State:	CA					
USGS Quad Name:	Blythe NE							Elevation:	86					
Creek, River, Wetland, or Lake Name	Lower Colorado River													
Site Coordinates:	Start:	E	731,861	N	3,731,804			UTM Zone:	11					
	Stop:	E	733,102	N	3,733,665			Datum:	NAD83					
Ownership:	CDFW													
Was site surveyed in previous year?	Y			If yes, what site name was used?				PVER Phase 07						

Survey # Observer(s) (Last Name, First Initial)	Date (m/d/y) 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 prior to response	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	Cuckoo#	Corrected Coordinates	
								UTM E	UTM N				UTM E	UTM N
Survey #1	Date:		5:15	PA	CN	1	NV	732,938	3,731,861	40	23	1	732,953	3,731,898
	6/16/2017		5:24	PA	CN	0	NV	732,923	3,732,159	50	50	2	732,961	3,732,191
Observer(s):	Start:													
Tobin M	5:03													
Squibb C	Stop:													
	8:06													
	Total hrs:	Total:												
	3.0	2												

Required: Seasonal Survey Summary Form

Required Survey Forms

Yellow-billed Cuckoo Survey Form

Site Name:	PVER Phase 07			County:	Riverside			State:	CA					
USGS Quad Name:	Blythe NE							Elevation:	86					
Creek, River, Wetland, or Lake Name	Lower Colorado River													
Site Coordinates:	Start:	E	731,861	N	3,731,804			UTM Zone:	11					
	Stop:	E	733,102	N	3,733,665			Datum:	NAD83					
Ownership:	CDFW													
Was site surveyed in previous year?	Y			If yes, what site name was used?				PVER Phase 07						

Survey # Observer(s) Last Name, First Initial)	Date (m/d/y) 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 prior to response	Behavior code	Surveyor Detection Coordinates		Distance (m)	Bearing	Cuckoo#	Corrected Coordinates	
								UTM E	UTM N				UTM E	UTM N
Survey #1	Date:		5:15	PA	CN	1	NV	732,938	3,731,861	40	23	1	732,953	3,731,898
	6/16/2017		5:24	PA	CN	0	NV	732,923	3,732,159	50	50	2	732,961	3,732,191
Observer(s):	Start:													
Tobin M	5:03													
Squibb C	Stop:													
	8:06													
	Total hrs:	Total:												
	3.0	2												
Survey #2	Date:		5:12	PA	CN	0	VEX	731,830	3,733,275	50	301	1	731,787	3,733,300
	6/30/2016		5:13	PA	CN	0	VEX	731,832	3,733,265	40	291	2	731,794	3,733,279
Observer(s):	Start:		5:38	PV	N/A	3	CN	731,826	3,733,584	10	103	3	731,836	3,733,581
Tobin M	5:08		5:44	PA	CN	1	NV	731,937	3,732,859	50	306	4	731,896	3,732,888
Squibb C	Stop:													
	8:10													
	Total hrs:	Total:												
	3.0	4												
Survey#3	Date:		5:33	PA	CO	0	NV	731,004	3,732,810	150	335	1	730,940	3,732,946
	7/14/2016		5:41	PA	CN CO	3	NV	730,882	3,733,223	55	71	2	730,934	3,733,241
Observer(s):	Start:		5:48	PA	CO	0	NV	730,870	3,733,338	100	57	3	730,954	3,733,392
Tobin M	5:13		6:02	PB	AL	0	DD	731,181	3,733,203	15	272	6	731,166	3,733,203
Squibb C	Stop:													
	8:07													
	Total hrs:	Total:												
	3.0	4												
Survey #4	Date:		5:59	PA	AL CN	1	NV	731,924	3,732,959	55	221	1	731,992	3,732,925

Required: Seasonal Survey Summary Form

Required Survey Forms

Survey Period #4	Date:													
Observer(s):	Start:													
	Stop:													
	Total hrs:	Total:												

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

Notes (refer to Cuckoo # associated with individual detections)	

*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.

Survey Summary Codes: PO = Possible Breeding Territory/PR = Probable Breeding Territory/CO = Confirmed Breeding Territory

Required: Seasonal Survey Summary Form

Required Survey Forms

	3.0	4												
Survey #4	Date:		5:50	PA	AL CN	1	NV	731,934	3,732,859	55	231	1	731,892	3,732,825
	7/29/2016		6:30	PA	CO	0	NV	731,556	3,733,243	60	228	2	731,511	3,733,203
Observer(s):	Start:		7:18	PB	AL	1	NY	731,200	3,732,944	15	181	3	731,199	3,732,929
	5:35													
	Stop:													
	9:00													
	Total hrs:	Total:												
	3.5	3												

Survey Summary:	# Det	#PO	#PR	#CO	#Nests found	Total Survey Hours:
Total YBCUs*	13	1	1	2	1	12.50

Notes (refer to Cuckoo # associated with individual detections)	
	Survey 4, Det #3: found nest after hearing AL call from area. In 10 m high Goodding willow, nest is 3 m high
	PO: Detections in northeast corner during surveys 2 and 3
	PR: Though I saw stick carry in central south patch plus detections in area surveys 1-3
	CO1: Distraction display during survey 3, area of high activity
	CO2: Survey 4, Det #3: found nest after hearing AL call from area. In 10 m high Goodding willow, nest is 3 m high

*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.

Survey Summary Codes: PO = Possible Breeding Territory/PR = Probable Breeding Territory/CO = Confirmed Breeding Territory

Optional: Daily Datasheet — Front

Optional Survey Forms

OPTIONAL Yellow-Billed Cuckoo Daily Datasheet

Total YBCU Detections		Page__1_ of ____

Surveyor name:		Surveyor email:			Surveyor Phone:		
Site Code:	Site Name:	Survey Period:	Visit #:	Date (mm/dd/yy):		Additional observers:	
Drainage:	State:	County:					
Survey Start	Time:	Wind:	Cloud cover:	Precip:	Noise:	Temp:	
Survey End	Time:	Wind:	Cloud cover:	Precip:	Noise:	Temp:	
NAD:	Start Northing		Start Easting		Start GPS Accuracy (m):		
Zone:	Stop Northing		Stop Easting		Stop GPS Accuracy (m):		

Call Point Start Time	Survey Call Point UTM Coordinates		Waypoint Number	If a YBCU is detected, please provide the information below									Note #	*	*
	Northing	Easting		Detection # - separate line for each YBCU	Time of Detection	I=IncidentalP =Playback	A=auralV =visual B=both	Compass Bearing (°)	Estimated Distance (m)	Est. Dist. Accuracy (use codes from pg. 2)	Vocal Code (you can use more than one code)	Behavior/ Breeding Code (you can use more than one)			

Notes: _____

Optional: Daily Datasheet — Back

Optional Survey Forms

	Date	Initials
Data Entry:		
Data Proof:		
Data Scan :		

* Blanks provided for region-specific or project-specific data. Please define these fields in "Notes" or the space provided.

OPTIONAL Yellow-Billed Cuckoo Daily Datasheet pg. 2

Site Code:	Site Name:	Survey Period:	Visit #:	Date (mm/dd/yy):	Page____ of ____

Wind		Precipitation		Noise codes		Dist Acc.		VOCALIZATION	CODE	BEHAVIOR	CODE	BEHAVIOR	CODE	BREEDING	CODE	CLOUD COVER
Calm	0	None	0	Quiet	0	1	exact	Contact	CON	No visual	NV	Catches Prey	CP	Copulation	COP	
Smoke drifts	1	Mist	1	Faint noise	1	2	estimate	Coo	COO	Sitting	ST	Carry Food	CF	Feeds Mate	FM	C < 25%
Felt on face	2	Drizle	2	Moderate: detection radius ↓	2	3	±25m	Knock/Alarm	ALA	Foraging	FO	Eats Food	EF	Carry Nest Material	CN	PO 25-49%
Leaves move	3	Rain	3			4	±50m	Juvenile Calls	JUVC	Preening	PRE	At Nest	AN	Brooding/Incubating	BI	MO 50-75%
Small branches move	4	Heavy rain	4	Loud: Only closest birds detected	3	5	±100m	Other Vocaliz.	OV	Flying	FLY	Juvenile	JUV	Feeds Nestling	FN	O > 75%
Small trees move	5	Snow	5			6	guess			Distraction Display	DD	Vocal Exchange	VEX	Feeds Fledgling	FF	

Point Start Time	Survey Call Point UTM Coordinates: Northing	Survey Call Point UTM Coordinates: Easting	Waypoint Number	If a YBCU is detected, please provide the information below: Detection # - separate line for each YBCU	Time of Detection	I=IncidentalP =Playback	A=auralV =visual B=both	Compass Bearing °	Estimated Distance (m)	Est. Dist. Acc.	Vocal Code (can use more than one)	Behavior/ Breeding Code -can use more than one	Note #	*	*

Notes:

* Blanks provided for region-specific or project-specific data. Please define these fields in "Notes" or the space provided. (revised 06/03/2016)

Surveyor name:	Surveyor email:	Surveyor Phone:
Surveyor Affiliation (e.g. AGFD, BLM, etc.):	Please check your permits for reporting requirements and timing.	

Questions?

D Tracy/SSRS