

# Distribution and Status of the Yellow-billed Cuckoo (*Coccyzus americanus*) in Wyoming

prepared by  
Jason Bennett and Doug Keinath  
Wyoming Natural Diversity Database  
University of Wyoming  
Laramie, Wyoming



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Sheridan, Wyoming

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## **Introduction**

The future federal status of the Yellow-billed Cuckoo (*Coccyzus americanus*) in North America remains unclear. A petition was filed in 1986 to list the western subspecies (*C. a. occidentalis*) under the Endangered Species Act (ESA). The U.S. Fish and Wildlife Service (USFWS) published a 12-month finding in 1998 stating that the petition was not warranted due to the fact that the petitioned area did not encompass a distinct population segment. On February 2, 1998 another petition was filed by the Southwest Center for Biological Diversity and a coalition of 23 groups to list the Yellow-billed Cuckoo or the western subspecies under the ESA (Suckling et al. 1998). The USFWS did not process the petition citing the agency's policy prohibiting the acceptance of new ESA petitions at that time. A lawsuit was filed to obtain a review and decision by the Service. On February 17, 2000 the USFWS published a 90-day finding that ESA protection may be needed for the western Yellow-billed Cuckoo, but not the full species over its entire range (USDI FWS 2000). On April 14, 2000 the USFWS received a document containing comments on the 90-day finding from 22 renowned scientists (Amundson et al. 2000) indicating the importance of listing the Yellow-billed Cuckoo. The USFWS is currently facing another lawsuit over its finding that the full species does not warrant protection. A federal judge has ordered the USFWS to make a decision on whether to propose listing the Yellow-billed Cuckoo (full species) as endangered by August 1, 2001.

The western subspecies of the Yellow-billed Cuckoo is likely present in Wyoming, but at this time the taxonomic identity remains unclear. Wyoming is on the periphery of the Yellow-billed Cuckoo's range and observations are rare. In order to address the status and distribution of Yellow-billed Cuckoos in Wyoming and to aid decision makers, we have compiled known information on the species in this document.

## **Biology**

### **Identification**

Genus profile is unique; slender, long-tailed, robin sized bird with stout, moderately long, de-curved bill. Lower mandible is yellow to orange-yellow at base with dark tip. Upperparts are brownish gray tinged with olive. Underparts and throat are dull white. Its long tail is brownish gray above and black below. Outer tail feathers have distinctive broad white tips giving the appearance of 6 large white spots on the underside. Inner webs of flight feathers with distinctive rufous-cinnamon patches visible in flight. Sexes are similar, juvenile with less distinct tail pattern and duller cinnamon in the wing coverts. Black-billed Cuckoos (*Coccyzus erythrophthalmus*) are distinguished from the Yellow-billed Cuckoo by having much smaller white patches in tail, no rufous wing patch, and a black lower mandible. More often heard than seen, cuckoos may best be distinguished by call. The Yellow-billed Cuckoo call is generally louder and longer in duration than the Black-billed Cuckoo's call (review of recorded vocalizations suggested).

Vocalizations: Distinctive calls are heard more frequently during early part of breeding cycle, but continues through nesting. Several types of calls summarized by Hughes (1999):

- 1) *Kowlp Call*: 8-12 guttural, wooden-sounding syllables; *ka-ka-ka-kow-kow-kowlp-kowlp-kowlp*. May function to attract mate and as a spacing mechanism between pairs.
- 2) *Knocker Call*: harsh, rattled, rapid series of notes; *kow-kow-kow-kow-kow* that resembles metal doorknocker hitting plate. May serve as contact call between mated pairs.
- 3) *Coo Call*: several soft, repeated cooing notes; *coo-coo-coo-coo-coo-coo-coo*. This call given

by males to attract mate and by females to initiate copulation.

### **Taxonomy and Distribution**

The American Ornithologist's Union (AOU) recognizes two subspecies of Yellow-billed Cuckoos in North America; the western (*C. a. occidentalis*) and the eastern (*C. a. americanus*). The validity of the subspecific designations is in question and is the topic of recent discussion (Banks 1988, 1990; Franzreb and Laymon 1993). The USFWS is funding a genetic study on geographic variation to help clarify the question of whether the subspecies status is valid.

The two subspecies are geographically split in their summer breeding range by the Rocky Mountains, south along the Pecos River to the confluence with the Rio Grande (Figure 1). The eastern is locally common throughout its range, while the range of the western has been drastically reduced and is now found only in small, isolated populations. Wyoming appears to be on the boundary between the subspecies. The western subspecies may be found along the Lower Green River Basin from Seedskadee NWR to Flaming Gorge Reservoir and west to the Bear River Drainage. The eastern subspecies may be found along the Bighorn, Powder, and North Platte rivers. Recent investigations suggest that Yellow-billed Cuckoos along the North Platte River in Nebraska are more likely the western subspecies (Scharf 2001), and hence individuals found in the North Platte River in Wyoming may also be the western subspecies. We examined two specimens collected from the city of Laramie and measurements proved ambiguous. Eastern Wyoming may be an area of intergrade between the two subspecies.

### **Habitat**

Rangewide-Summer: Open woodland with clearings and thick, scrubby undergrowth along watercourses. Prefers relatively large tracks of deciduous riparian woodland and generally absent from heavily forested and urban areas (Hughes 1999). Generally uses tangled willow habitat for nesting and tall cottonwood stands for foraging. Nests in deciduous woodlands, moist thickets, orchards, overgrown pastures; in tree, shrub, or vine, an average of 1-3 meters above ground (Harrison 1979). In California, *C. a. occidentalis* requires patches of dense riparian forest in excess of 20 hectares (Laymon and Halterman 1991) with a canopy cover of at least 50 percent in both the understory and overstory (Biosystems Analysis 1989).

Rangewide-Winter: Inhabits various types tropical and sub-tropical lowland, woody/scrubby vegetation along watercourses in Central and South America.

Wyoming: Selects relatively large stands of cottonwood-riparian habitat below approximately 7000 feet (habitat requirements summarized by Hughes 1999). This habitat is limited in Wyoming, occurring mainly along the Bighorn, Powder, Laramie, Cheyenne, and North Platte River drainages. It may also nest in urban areas (Wyoming Game and Fish Department 1997), open woodlands (especially where undergrowth is thick), parks, and deciduous riparian woodland.

### **Food Habits**

Cuckoos eat primarily large insects such as caterpillars, cicadas, and grasshoppers. They will occasionally take frogs and small lizards. Cuckoos have also been known to take eggs and young of other birds and will sometimes eat small fruits and nuts. Generally cuckoos will sit inconspicuously and scan surrounding vegetation for prey items. They often will glean insects from leaves and stems while perched, but will also run along branches to secure prey (Hughes 1999).

## **Residence and Breeding**

Rangewide: Yellow-billed Cuckoos are long distance migrants and arrive on their breeding grounds in late spring. Eastern cuckoos generally arrive during late April or May and depart for wintering grounds in late September through October. Western cuckoos arrive in mid-May or June and depart late August through September. Peak breeding periods for western populations occur during mid July to early August (Laymon 2000). Pair formation and nest building begins soon after arrival from the wintering grounds. Both members of the pair build a well-concealed nest of twigs in dense foliage within 10m of the ground (Laymon 1980). Breeding periods may vary seasonally and often coincide with the appearance of massive numbers of cicadas, caterpillars, or other large insects (Ehrlich et al. 1992). Clutch size is one to five (usually two or three), largest when prey is abundant. Incubation lasts 9-11 days (Potter 1980, 1981; Hamilton and Hamilton 1965) and is shared equally between males and females. Both parents brood and tend young. Young leave the nest and climb branches to meet attending adult at seven to nine days. Cuckoos may sometimes double brood in the East, but not likely in the West due to a shorter breeding season (summarized by Hughes 1999). Adults and young leave the nesting area one day after chicks have fledged (Potter 1980).

Wyoming: Yellow-billed Cuckoos arrive during late May and depart for wintering grounds during late August through September (Dorn and Dorn 1999).

Brood Parasitism: Both Yellow-billed and Black-billed Cuckoos are facultative brood parasites. Although likely uncommon, Yellow-billed Cuckoos will lay eggs in conspecific's nest during times of food abundance when eggs are sometimes produced in excess of next capacity, or when female has no nest. They will also parasitize the nests of Black-billed Cuckoos, American Robin, Gray Catbird and Wood Thrush (Hughes 1997).

## **Behavior**

Calls: Yellow-billed Cuckoos call most frequently upon arrival on breeding grounds; during pair formation and nest building. They call less frequently throughout nesting cycle and rarely after last young has fledged (Potter 1980).

Territoriality: Not highly territorial. Has been known to aggressively supplant conspecifics and may establish loose breeding territories that cover a relatively large area (Hamilton and Hamilton 1965). There was no evidence of breeding or foraging territories found in California (Laymon 1980).

Mating: Courtship begins with the female raising and lowering tail several times with the male nearby. The male then snaps off a twig and brings it to her, landing directly on her back. The male places the twig crosswise in the female's bill at which point copulation begins. (Hughes 1999).

## **Abundance**

Rangewide: Yellow-billed Cuckoos are somewhat common in the Southeast; less abundant in the Northeast; and very local and rare in the Western United States (Hughes 1999)

Wyoming: Currently the Yellow-billed Cuckoo is considered an uncommon summer resident (Wyoming Game and Fish Department 1997, Dorn and Dorn 1999), but this designation is uncertain given the lack of survey data.

## ***Population Status***

USFWS: Currently no protected status. On February 17, 2000 the USFWS announced a positive 90-day finding in response to a petition filed to list the Yellow-billed Cuckoo under the ESA. The USFWS will initiate a status review and subsequent 12-month finding which may be available in August 2001. At this time only the western subspecies is being considered.

USFS R2: Sensitive (Table 1).

State Status: There is some degree of state protection for *C. a. occidentalis* in California and Arizona, but none in New Mexico, Texas, Utah, or Colorado.

Wyoming State Status: WGFD SSC 2 (Table 1) due to limited distribution of preferred breeding habitat and the lack of population status and trend data (Wyoming Game and Fish Department, 1997).

### **Occurrences from the WYNDD database**

For actively tracked bird species such as the Yellow-billed Cuckoo the number of recent element occurrence records (EORs) in WYNDD's Biological and Conservation Database (BCD) gives some indication of the distribution and status of bird populations in Wyoming. EORs are based on confirmed or suspected breeding observations. Each EOR often contains multiple observations from several years in a localized area. For example, observations from Edness K. Wilkins State Park near Casper form one occurrence, which represents multiple observations over several years. The Point Observation Database (POD) holds coordinate information for each observation within an EOR and single observations that do not meet EOR specifications (e.g. confirmed or suspected breeding).

Observations of Yellow-billed Cuckoos in Wyoming are extremely rare. Most sightings in WYNDD's database occurred in the 1980's and early 1990's. The latest observations occurring at Edness K. Wilkins State Park near Casper during August 1998 and 2000.

BCD Database: 12 element occurrence records (Figure 2); 2 extant suspected breeding area, 3 historic (pre-1991) confirmed breeding records, and 7 historic suspected breeding records.

POD Database: 47 point observation records; 36 WGFD Wildlife Observation System (WOS) records (9 within existing EORs), 9 Breeding Bird Survey records (5 within existing EORs), and 2 specimen records. Some of the WOS records may be duplicates.

## ***Management Considerations***

Population Trends: Populations are declining precipitously throughout the Yellow-billed Cuckoo's range. Although more common in the eastern U.S. it has been nearly extirpated in the West and is restricted to small isolated populations. No longer found in British Columbia, Washington, Oregon or Nevada. Once very common in California numbering in the thousands, now reduced to approximately 30 pairs. There have been relatively few observations reported in Wyoming and still fewer that have documented breeding.

*Threats:* Population declines across the West from loss of cottonwood riparian habitat as a result of conversion to agriculture, dams and river flow management, bank protection, overgrazing, and competition from exotic plants such as tamarisk (Laymon 1987, 2000; Hughes 1999; UDSI FWS 2000). Yellow-billed Cuckoos are also threatened by their low population size, extreme population fluctuations, and patchy distribution (Finch, 1992). Pesticides may also negatively affect populations (Laymon and Halterman, 1987).

Laymon (1980) suggested these conservation measures: determine numbers and locations of remnant populations; improve riparian habitats; eliminate pesticide spraying in orchards adjacent to riparian areas; and investigate feasibility of captive breeding and reintroduction to naturally regenerated or reforested habitat.

*Protection Status in Wyoming-* The geographic distribution and habitat associations of the Yellow-billed Cuckoo predisposes its occurrence on mostly private land. Management practices vary widely among landowners and government agencies. WYNDD's public land records in the BCD database include: one within the Black Hills National Forest; 1 in the Springer Wildlife Habitat Management Unit (WHMU); 1 in the Rawhide WHMU; 2 occur on BLM land; 1 on state land; 1 within Edness K. Wilkins State Park; 2 within City Parks; and 1 occurs on Seedskaadee National Wildlife Refuge.

*Survey Requirements:* Due to its cryptic nature, current survey methods do not adequately census the Yellow-billed Cuckoo (Laymon 1998). Playback surveys are the recommended method for conducting surveys (see Appendix II for protocol). WGFD recommends monitoring populations in suitable habitat annually using taped calls to locate breeding adults. Cottonwood-riparian breeding habitat is limited and vulnerable to human activity in Wyoming. WGFD (1996) recommends identifying and mapping suitable breeding habitat or habitat that might be suitable in the future.

*Information Needs:* A clarification of taxonomic status of populations throughout North America is needed. Also, detailed distribution, habitat use (including the identification of major migratory corridors) and population information are needed for Wyoming. Other needs include information on life span, territoriality, mate and site fidelity, and community interactions.

## Tables and Figures

**Table 1: Official status of the Yellow-billed Cuckoo**

Taxon	Heritage Rank	Federal and State	WY Counties	Range Notes
<i>C. a. occidentalis</i>	G5/S2B,SZN	USFS R2 Sensitive WYGF SSC2	LIN, SWE, UIN, TET	Breed: NE periph.
<i>C. a. americanus</i>	G5/S2B,SZN	USFS R2 Sensitive WYGF SSC2	*ALB, BIG, CAR, CON, CRO, FRE, GOS, HOT, JOH, PLA, SHE, SWE	*Breed: NW periph.

\*Taxon remains unclear. Wyoming birds may all be *C. a. occidentalis*.

### Notes on codes used in Table 1

**HERITAGE RANKS:** WYNDD uses a standardized ranking system developed by The Natural Heritage Network to assess the global and statewide conservation status of each plant and animal species, subspecies, and variety. Each taxon is ranked on a scale of 1-5, from highest conservation concern to lowest. Codes are as follows:

*G - Global rank:* rank refers to the rangewide status of a species.

*T - Trinomial rank:* rank refers to the rangewide status of a subspecies or variety.

*S - State rank:* rank refers to the status of the taxon (species or subspecies) in Wyoming. State ranks differ from state to state.

*1 - Critically imperiled* because of extreme rarity (often known from 5 or fewer extant occurrences or very few remaining individuals) or because some factor of a species' life history makes it vulnerable to extinction.

*2 - Imperiled* because of rarity (often known from 6-20 occurrences) or because of factors demonstrably making a species vulnerable to extinction.

*3 - Rare* or local throughout its range or found locally in a restricted range (usually known from 21-100 occurrences).

*4 - Apparently secure*, although the species may be quite rare in parts of its range, especially at the periphery.

*5 - Demonstrably secure*, although the species may be rare in parts of its range, especially at the periphery.

**FEDERAL MANAGEMENT STATUS:** USFS Region 2 (Rocky Mountain Region) and 4 (Intermountain Region) have developed official Sensitive species lists to track organisms warranting special attention on USFS lands. Sensitive species are defined as "those plant and animal species identified by the Regional Forester for which population viability is a concern as evidenced by: (a) significant current or predicted downward trends in population numbers or density, and/or (b) significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution." US Forest Service Region 2 includes Bighorn, Black Hills, Medicine Bow, and Shoshone National Forests and Thunder Basin National Grassland. US Forest Service Region 4 includes Ashley, Bridger-Teton, Caribou, Targhee, and Wasatch-Cache National Forests.

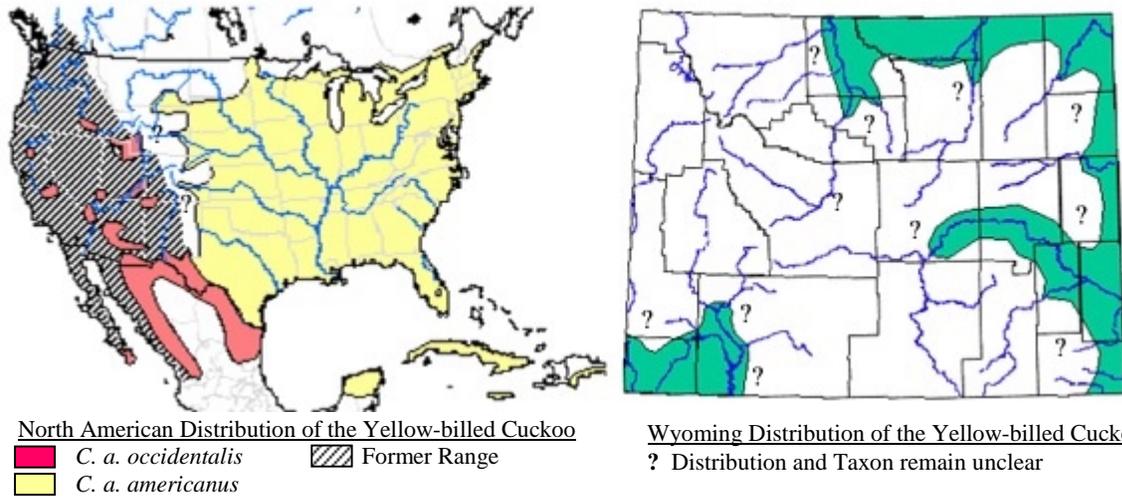
**WYOMING STATE MANAGEMENT STATUS:** Wyoming Game and Fish Department (WYGF): The WYGF has developed a matrix of habitat and population variables to determine the conservation priority of all native, breeding bird and mammal species in the state. Six classes of Species of Special Concern (SSC) are recognized, of which classes 1, 2, and 3 are considered to be high priorities for conservation attention.

*SSC1:* Includes species with on-going significant loss of habitat and with populations that are greatly restricted or declining (extirpation appears possible).

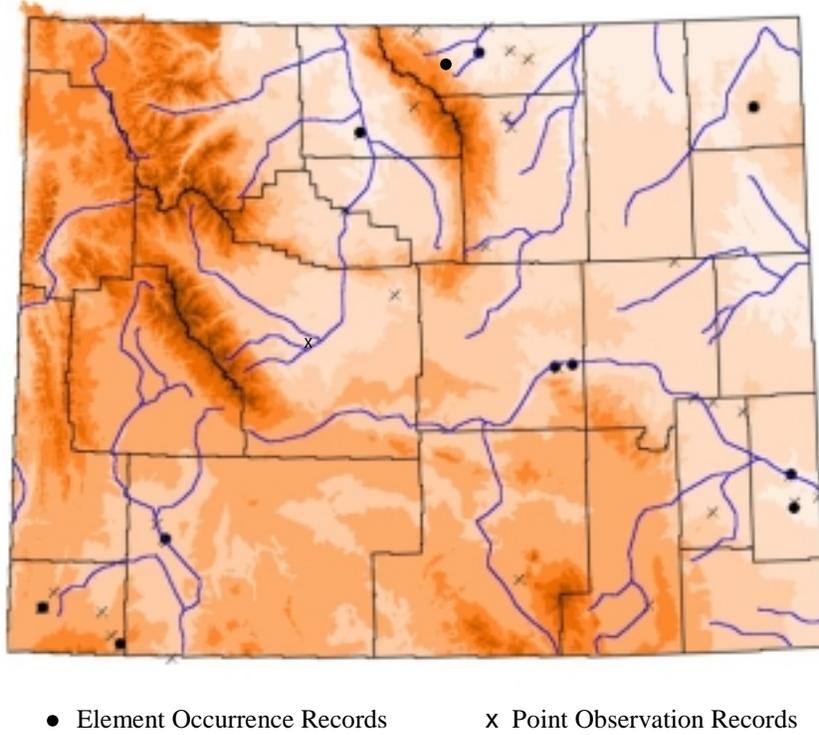
*SSC2:* Species in which (1) habitat is restricted or vulnerable (but no recent or significant loss has occurred) and populations are greatly restricted or declining; or (2) species with on-going significant loss of habitat and populations that are declining or restricted in and distribution (but extirpation is not imminent).

*SSC3:* Species in which (1) habitat is not restricted, but populations are greatly restricted or declining (extirpation appears possible); or (2) habitat is restricted or vulnerable (but no recent loss has occurred) and populations are declining or restricted in numbers or distribution (but extirpation is not imminent); or (3) significant habitat loss is on-going but the species is widely distributed and population trends are thought to be stable.

**Figure 1: Summer Breeding Distribution of *Coccyzus americanus* in North America and Wyoming**



**Figure 2: Reported occurrences and point observations of Yellow-billed Cuckoos in Wyoming.**



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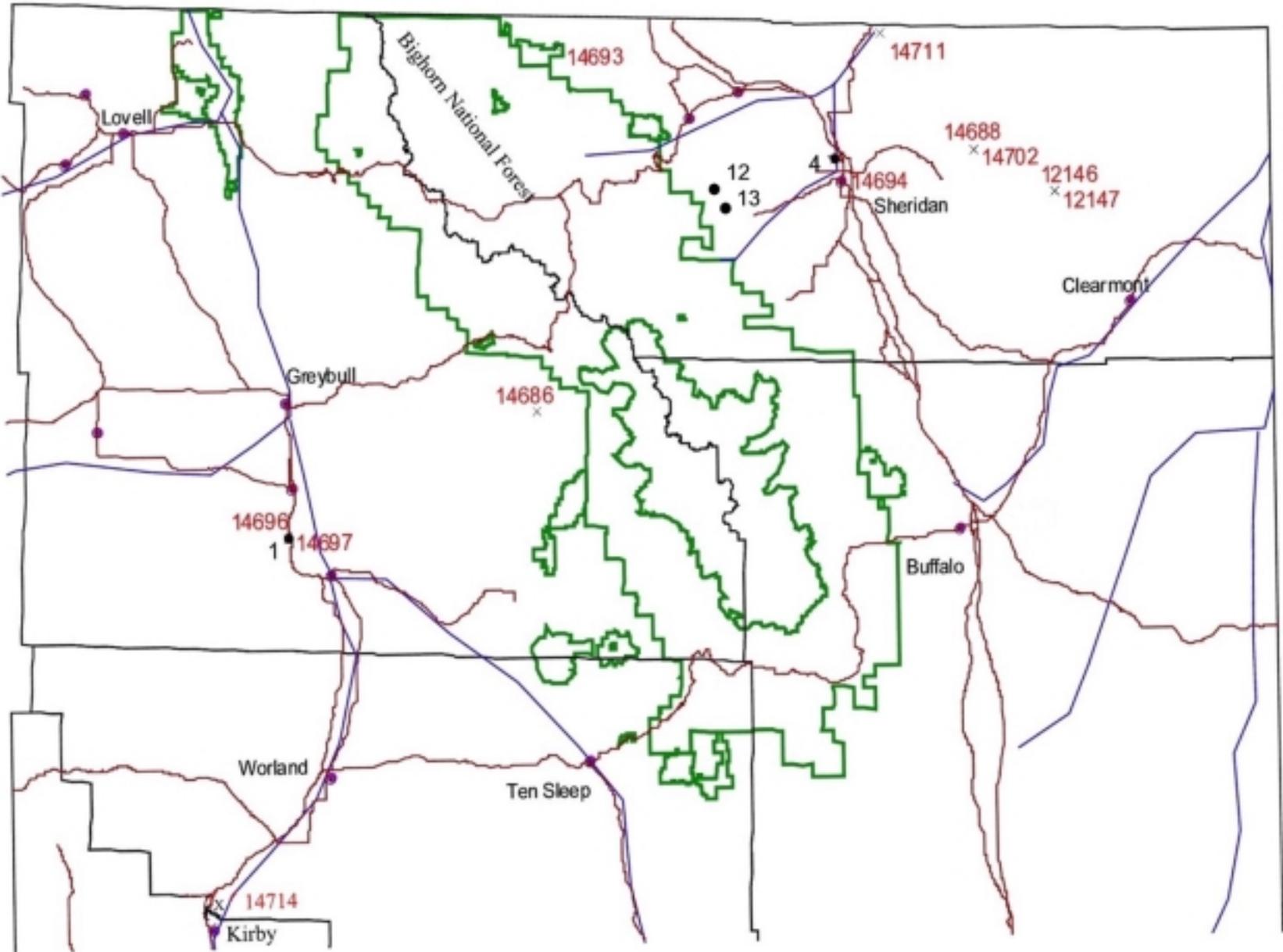
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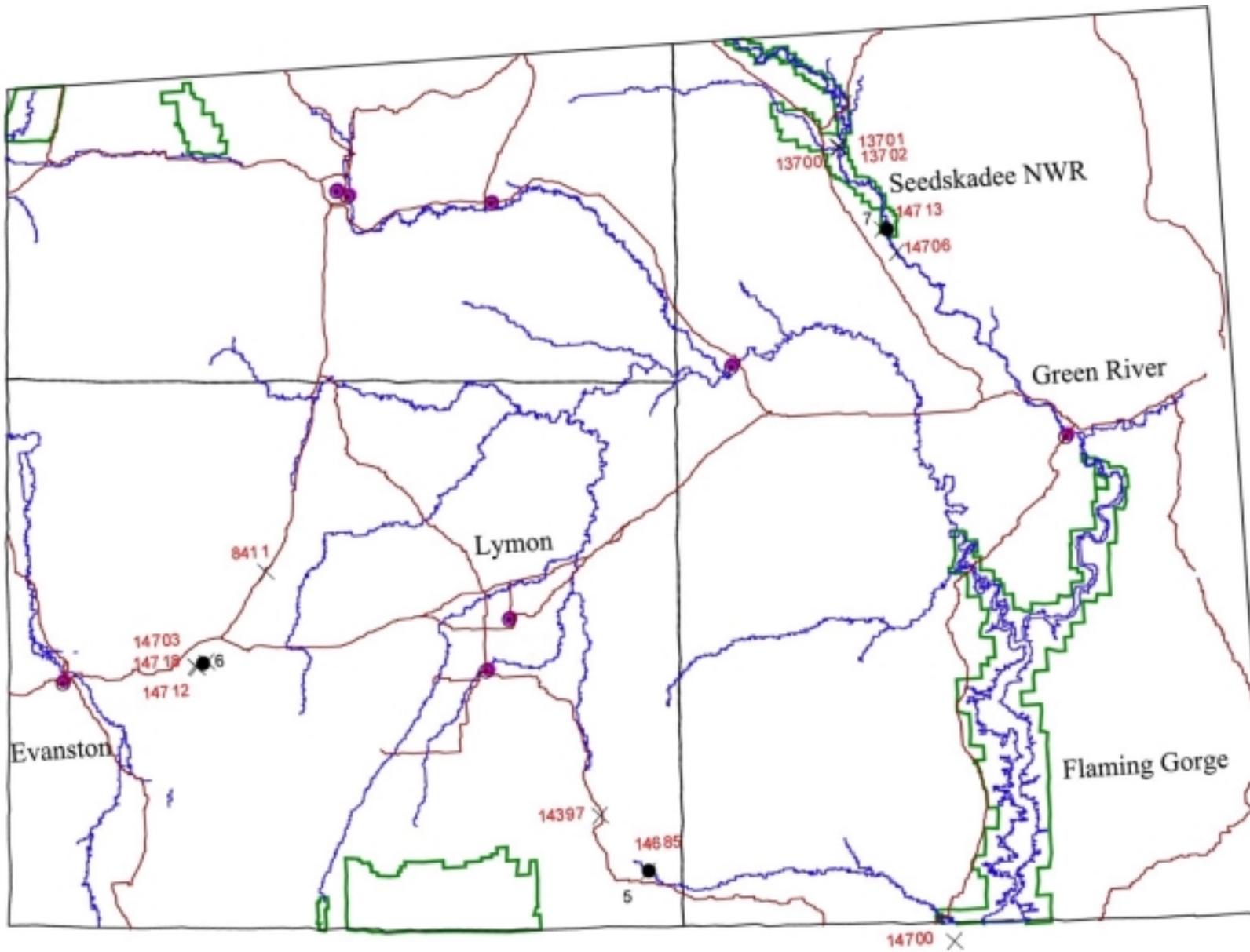
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*APPENDIX I*

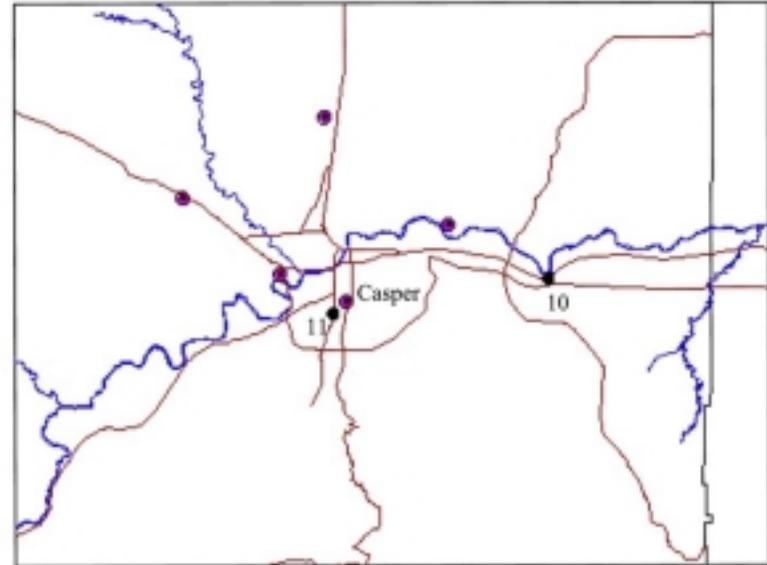
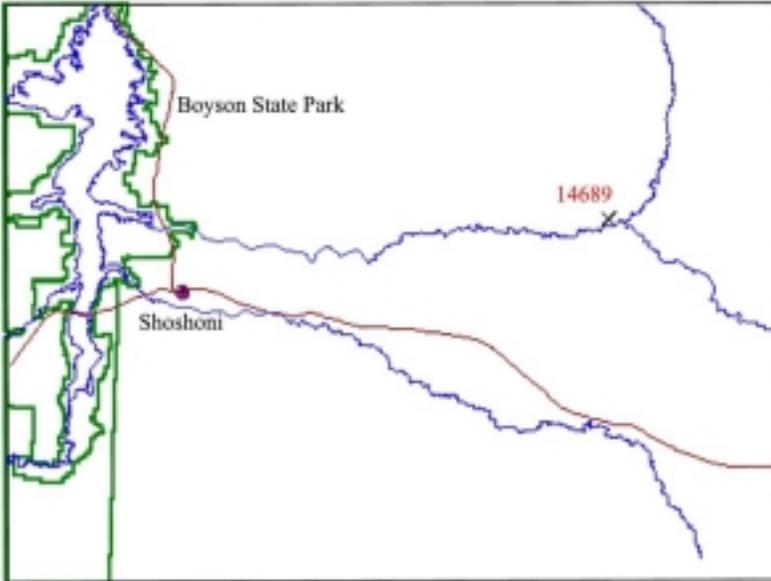
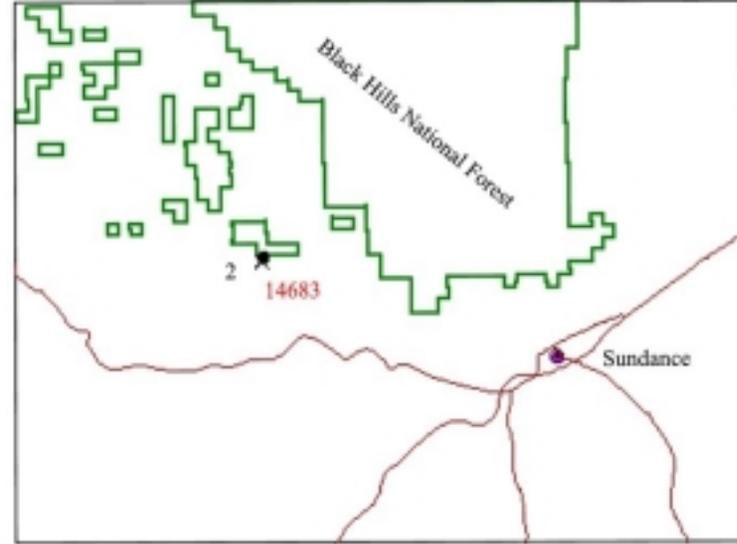
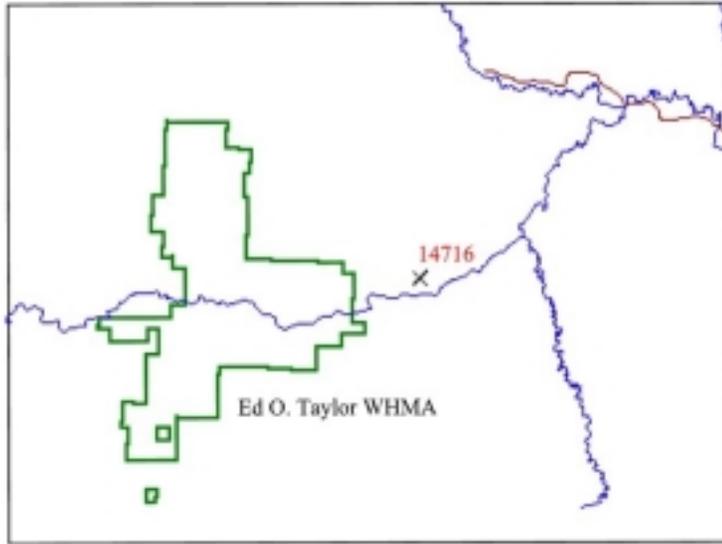
Maps  
Element Occurrence Records  
Point Observation Records



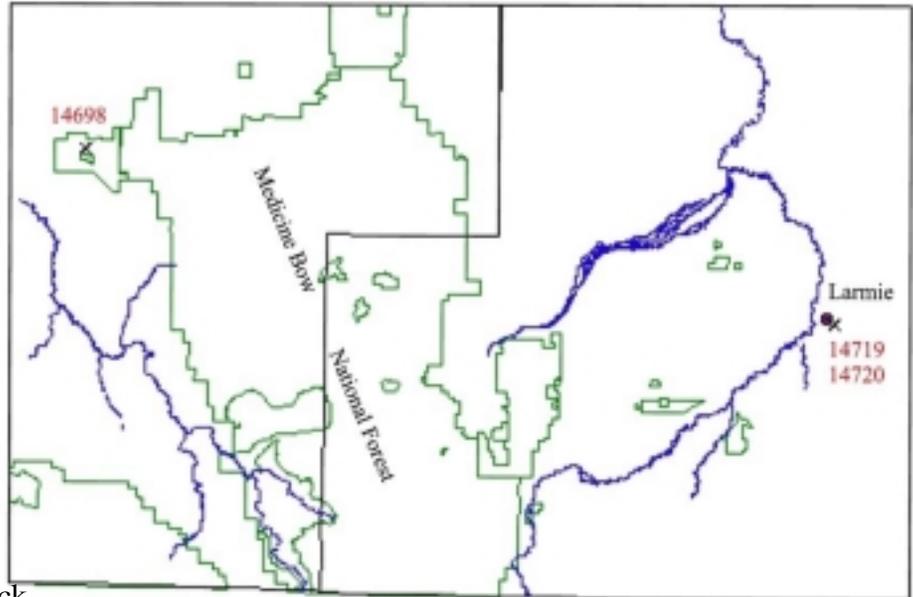
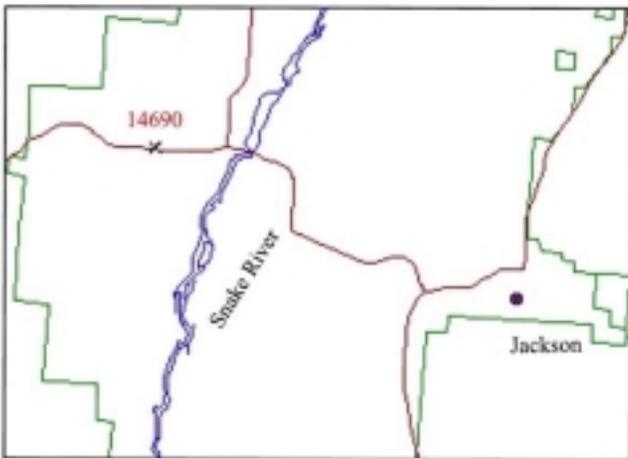
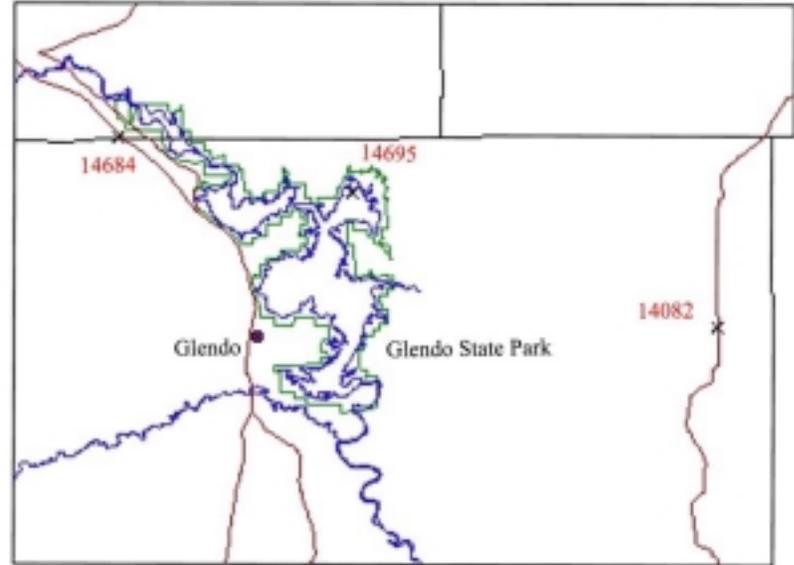
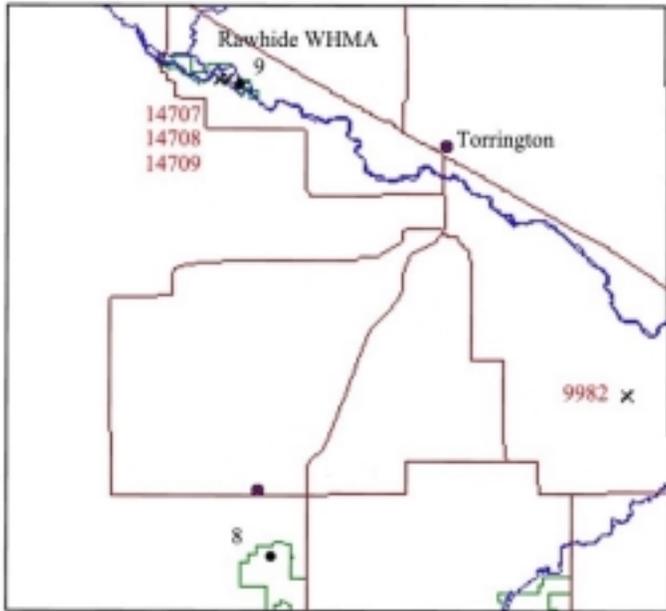
- Element Occurrence Record Numbers in Black
- X Point Observation Record Numbers in Red (not all shown)



- Element Occurrence Record Numbers in Black
- X Point Observation Record Numbers in Red (not all shown)



- Element Occurrence Record Numbers in Black
  - X Point Observation Record Numbers in Red (not all shown)
- Maps not to scale



- Element Occurrence Record Numbers in Black
  - X Point Observation Record Numbers in Red (not all shown)
- Maps not to scale



**Element Occurrence Record**  
COCCYZUS AMERICANUS

Elcode        EO#  
 EOCODE:      ABNRB02020\*002\*WY        IDENT: Y

COUNTYNAME                              PRECISION: M  
 Crook

LAT: 442613N  
 LONG: 1043020W

TOWNRANGE:    SECTION:  
 051N064W      02

DIRECTIONS: Black Hills, Bear Lodge Mountains, vicinity of South Fork  
 Miller Creek, southeast of "The Rocks", ca 5 miles northwest  
 of Sundance.

SURVEYDATE:                              LASTOBS: 1988-06-27        FIRSTOBS: 1988-06-27  
 EORANK:        H                              EORANKDATE: 1988-06-27  
 EORANKCOM:

EODATA:        1988-06-27: 1 adult and 1 juvenile bird observed; WOS.

EOTYPE:        BREEDING SITE - migratory animals

MANAME:  
 BEARLODGE RANGER DISTRICT  
 BLACK HILLS NATIONAL FOREST

OWNERCOM:

COMMENTS:    WOS record number 000813338.

DATASENS:     N  
 BESTSOURCE: Wyoming Game and Fish Department Wildlife Observation System

SOURCECODE:    CITATION:  
 UNDWYO00WYUS Wyoming Game and Fish Department, Wildlife Observation System Dat

SPECIMENS:

EDITION:      97-05-06                      EDAUTHOR: Walter Fertig  
 :  
 :





**Element Occurrence Record**  
COCCYZUS AMERICANUS

Elcode            EO#  
EOCODE:          ABNRB02020\*006\*WY          IDENT: Y

COUNTYNAME                                  PRECISION: M  
  Uinta

LAT: 411644N  
LONG: 1104527W

TOWNRANGE:      SECTION:  
015N118W        18

DIRECTIONS: Overthrust Belt, vicinity of Abert Creek ca 1 mile west of  
              "The Boilers", ca 1-1.5 miles southeast of Interstate 80 and  
              3 miles east of Duncomb Hollow.

SURVEYDATE:                                  LASTOBS: 1979-07-05          FIRSTOBS: 1979-07-05  
EORANK:          H                                  EORANKDATE: 1979  
EORANKCOM:

EODATA:          1979-07-05: 2 birds observed undergoing courtship  
                  displays-T15N R118W S18, 2 other birds observed in  
                  courtship; WOS. It is unclear whether these are the same  
                  observations with different WOS numbers. ^1979: 2  
                  individuals observed during Breeding Bird Survey (BBS) on  
                  Route 22 (Cuberland); Sauer et al.

EOTYPE:          breeding area

MANAME:  
BLM KEMMERER FIELD OFFICE

OWNERCOM:

COMMENTS:        Includes WOS numbers 000692688, 001132614, and 001130614.  
                  BBS data is "G" precision. Routes are 24.5 miles in length.

DATASENS:        N  
BESTSOURCE: WYGF Wildlife Observation System

SOURCECODE:      CITATION:  
UNDWYO00WYUS Wyoming Game and Fish Department, Wildlife Observation System Dat  
N00SAU00WYUS Sauer, J. R., J. E. Hines, I. Thomas, J. Fallon, and G. Gough. 20

SPECIMENS:

EDITION:        01-03-07                          EDAUTHOR: J.Bennett  
:  
:



**Element Occurrence Record**  
COCCYZUS AMERICANUS

Elcode        EO#  
 EOCODE:      ABNRB02020\*008\*WY        IDENT: Y

COUNTYNAME                                    PRECISION: M  
 Goshen

LAT: 415316N  
 LONG: 1041717W

TOWNRANGE:    SECTION:  
 022N062W      14                                    023N062W      35

DIRECTIONS: Southeast Plains, Springer [Goshen Hole] Reservoir, ca. 2  
 air miles south of Yoder and ca 7 air miles north of Hawk  
 Springs.

SURVEYDATE:                                    LASTOBS: 1988-06-12        FIRSTOBS: 1980-06-11  
 EORANK: E                                    EORANKDATE: 1988-06-12  
 EORANKCOM:

EODATA:        1988-06-12: 1 individual observed and breeding suspected; J.  
 and R. Dorn. ^1980-06-11: 1 individual of unknown age  
 observed; WOS.

EOTYPE:        BREEDING SITE - migratory animals

MANAME:  
 SPRINGER WILDLIFE HABITAT MANAGEMENT UNIT  
 STATE OF WYOMING

OWNERCOM:

COMMENTS:    WOS number 000674838.

DATASENS:    N  
 BESTSOURCE: Dorn, Robert and Jane.

SOURCECODE:    CITATION:  
 PNDDOR01WYUS Dorn, Robert D. Botanical Consultant, Mountain West Environmental  
 UNDWYO00WYUS Wyoming Game and Fish Department, Wildlife Observation System Dat

SPECIMENS:

EDITION:      01-03-15                    EDAUTHOR: J.Bennett  
 :  
 :

**Element Occurrence Record**  
COCCYZUS AMERICANUS

Elcode            EO#  
EOCODE:          ABNRB02020\*009\*WY          IDENT: Y

COUNTYNAME                                  PRECISION: M  
Goshen

LAT: 420543N  
LONG: 1041820W

TOWNRANGE:      SECTION:  
025N062W          33

DIRECTIONS: Goshen County, ca. 10m NW of Torrington along the North  
Platte River, within the Rawhide Wildlife Habitat Management  
Area.

SURVEYDATE:                                  LASTOBS: 1984-06-14          FIRSTOBS: 1980-07-04  
EORANK: E                                  EORANKDATE: 1980-07-04  
EORANKCOM:

EODATA:          1984-06-14: At least 1 individual observed, possibly 3, may  
be duplicate records; WOS. ^1982-06-24: 1 or 2 individuals  
observed, records may be duplicates; WOS. ^1981-07-09: 2  
individuals observed; WOS. ^1980-07-04: 1 individual  
observed in thickets of river bottom, suspected breeding; R.  
Dorn.

EOTYPE:          breeding area

MANAME:  
RAWHIDE WILDLIFE HABITAT MANAGEMENT AREA

OWNERCOM:

COMMENTS:      WOS record numbers (002386865, 002387135, 002387145-  
duplicates?), (002055285, 002119655- duplicates?), and  
001879725.

DATASENS: N  
BESTSOURCE: Dorn, Robert. Personal communication.

SOURCECODE:    CITATION:  
PNDDOR01WYUS Dorn, Robert D. Botanical Consultant, Mountain West Environmental  
UNDWYO00WYUS Wyoming Game and Fish Department, Wildlife Observation System Dat

SPECIMENS:

EDITION:      01-03-15                  EDAUTHOR: J. Bennett  
:  
:

**Element Occurrence Record**  
COCCYZUS AMERICANUS

Elcode        EO#  
EOCODE:        ABNRB02020\*010\*WY        IDENT: Y

COUNTYNAME        PRECISION: M  
Natrona

LAT: 425042N  
LONG: 1061119W

TOWNRANGE:        SECTION:  
033N078W        02,03,10

DIRECTIONS: Western High Plains, ca. 6 miles east of Casper, along the  
North Platte River within Edness K. Wilkins State Park.

SURVEYDATE:        LASTOBS: 2000-08-20        FIRSTOBS: 1994-06-02  
EORANK: E        EORANKDATE: 1994-06-02  
EORANKCOM:

EODATA: 2000-08-20: Observation reported from Edness K. Wilkins  
State Park (EKW); Jim and Gloria Lawrence (Murie Audubon).  
^1998-08-16: Observation reported EKW; Anne and Wilmer Hines  
(Murie Audubon). ^1994-06-04: Observation reported from EKW;  
J. and G. Lawrence. ^1994-06-02: Observation reported from  
EKW; A. and W. Hines. ^1985-05-25: No observations reported  
to Murie Audubon.

EOTYPE:        breeding area

MANAME:  
STATE OF WYOMING

OWNERCOM:        May also occur on adjacent private land.

COMMENTS:        Information received from Jim Lawrence on 6 March, 2001.

DATASENS: N  
BESTSOURCE: Lawrence, Jim. Murie Audubon. (307) 237-8174.

SOURCECODE:        CITATION:  
PNDLAW00WYUS Lawrence, Jim. Personal communication. Member of Murie Audubon So

SPECIMENS:

EDITION: 01-03-06        EDAUTHOR: J.Bennett  
:  
:

**Element Occurrence Record**  
COCCYZUS AMERICANUS

Elcode            EO#  
EOCODE:          ABNRB02020\*011\*WY          IDENT: Y

COUNTYNAME                                  PRECISION: S  
Natrona

LAT: 424935N  
LONG: 1062021W

TOWNRANGE:      SECTION:  
033N079W          17

DIRECTIONS: Western High Plains, City of Casper, Audubon City Park.

SURVEYDATE:                                  LASTOBS: 1988-0-14          FIRStOBS: 1983-08-07  
EORANK:          H                                  EORANKDATE: 1983-08-07  
EORANKCOM:

EODATA:          1988-07-13: 3 adults observed in vicinity; WOS. ^1985-05-25:  
                 Observation reported at Audubon Park; Lucy Rognstad (Murie  
                 Audubon). ^1983-08-07: Observations over several days at Audubon  
                 Park; L.Rognstad.

EOTYPE:          breeding area

MANAME:

OWNERCOM:          The Audubon Park is a City Park.

COMMENTS:          Jim Lawrence faxed observations on 6 March, 2001. Includes WOS  
                 number 813328

DATASENS:          N  
BESTSOURCE: Lawrence, Jim. Murie Audubon Member. (307) 237-8174.

SOURCECODE:      CITATION:  
PNDLAW00WYUS Lawrence, Jim. Personal communication. Member of Murie Audubon So

SPECIMENS:

EDITION:          01-03-06                  EDAUTHOR: J.Bennett  
:  
:

Element Occurrence Record  
COCCYZUS AMERICANUS

Elcode        EO#  
 EOCODE:      ABNRB02020\*012\*WY        IDENT: Y

COUNTYNAME                                  PRECISION: M  
 Sheridan

LAT: 444929N  
 LONG: 1071143W

TOWNRANGE:    SECTION:  
 056N086W      14

DIRECTIONS: Western high plains, east slope of Bighorn Mountains, along  
 East Wolf Creek, within Wolf Creek TNC easement.

SURVEYDATE:                                  LASTOBS: 1999-SU        FIRSTOBS:  
 EORANK:       E                              EORANKDATE: 1999-SU  
 EORANKCOM:

EODATA:        1999-Summer: At least one individual observed repeatedly by  
 Bob Berry and "probably" seen in summer 2000 as well. A  
 visiting birder mentioned that he had seen them in summer  
 1999 as well. Bob Berry stated in an email that he has seen  
 them in this area irregularly in past years.

EOTYPE:        OBSERVATION

MANAME:  
 WOLF CREEK EASEMENT

OWNERCOM:     Bob Berry gave WYNDD permission to use this information in  
 April 2001.

COMMENTS:

DATASENS:     N  
 BESTSOURCE:   Berry, Bob

SOURCECODE:   CITATION:  
 PNDBER00WYUS Berry, Robert. Land Owner and Audubon member.

SPECIMENS:

EDITION:      01-04-11                      EDAUTHOR: J.Bennett  
 :  
 :

Element Occurrence Record  
COCCYZUS AMERICANUS

Elcode        EO#  
 EOCODE:      ABNRB02020\*013\*WY        IDENT: Y

COUNTYNAME                              PRECISION: M  
 Sheridan

LAT: 444242N  
 LONG: 1070856W

TOWNRANGE:    SECTION:  
 055N085W      30

DIRECTIONS: Western high Plains, ca. 10 miles east of Sheridan, Rapid  
 Creek Ranch, along Kane Draw, tributary to Big Goose Creek.

SURVEYDATE:                              LASTOBS: 1978-SU        FIRSTOBS: 1978-SU  
 EORANK:        H                              EORANKDATE: 1978-SU  
 EORANKCOM:

EODATA:        1978-SU: At least one pair nested along draw, "I believe the  
 cuckoos were there several years thereafter;" Bob Berry.

EOTYPE:        BREEDING SITE

MANAME:

OWNERCOM:     Bob Berry gave us permission to keep records in our database  
 in April 2001.

COMMENTS:     Data received via email April 2001.

DATASENS:     N  
 BESTSOURCE:   Berry, Robert

SOURCECODE:   CITATION:  
 PNDBER00WYUS Berry, Robert. Land Owner and Audubon member.

SPECIMENS:

EDITION:      01-04-11                      EDAUTHOR: J.Bennett  
 :  
 :

**POD Records****YELLOW-BILLED CUCKOO****RECNUM:** 14082**EO Number:****Year Month Day**  
1995**Township Range Section**  
T29N R065W 6**LOCATION:** BBS Survey Route # 89. Meadowdale. Each route is 24.5 miles long**Biological Comments:**

1 individuals observed during Breeding Bird Survey. Each route is 24.5 miles long, with a total of fifty stops located at 0.5 mile intervals along the route.

**OBSERVER:** BBS Vounteer**Literature Source:**

Sauer, J. R., J. E. Hines, I. Thomas, J. Fallon, and G. Gough. 2000. The North American Breeding Bird Survey, Results and Analysis 1966 - 1999. Version 98.1, USGS Patuxent Wildlife Research Center, Laurel, MD

**Documentation Comments:**

Route location information provided by BBS. Start of route: (42.51, -104.695) T26 R78 S27. Section may be in error.

**IDENTIFIED:****PRECISION:** G**SENSITIVE:** n**COUNTY:****LAT:** 42 30 35**LONG:** 104 41 41**YELLOW-BILLED CUCKOO****RECNUM:** 14700**EO Number:****Year Month Day**  
1994 6 29**Township Range Section**  
12 109 36**LOCATION:** No written description provided.**Biological Comments:**

3 adults observed. Feeding

**OBSERVER:** WOS**Literature Source:**

WGFD Wildlife Observation System number 001148268

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**IDENTIFIED:** Y**PRECISION:** S**SENSITIVE:** n**COUNTY:****LAT:** 40 58 42**LONG:** 109 38 54**YELLOW-BILLED CUCKOO****RECNUM:** 14689**EO Number:****Year Month Day**  
1992 7 17**Township Range Section**  
38 91 3**LOCATION:** No written description provided.**Biological Comments:**

1 adult observed. Feeding

**IDENTIFIED:** Y**PRECISION:** S**SENSITIVE:** y**COUNTY:****LAT:** 43 17 8**LONG:** 107 44 37

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System number 001148258

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14702

**EO Number:**

Year	Month	Day
1991	6	17

Township	Range	Section
56	82	11

**LOCATION:** No written description provided.

**Biological Comments:**

1 individual(s) of unknown age observed.

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System (number ?)

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**IDENTIFIED:** Y

**PRECISION:** S

**SENSITIVE:** n

**COUNTY:**

**LAT:** 44 50 11

**LONG:** 106 41 43

**YELLOW-BILLED CUCKOO**

**RECNUM:** 12147

**EO Number:**

Year	Month	Day
1991		

Township	Range	Section
T56N	R80W	31

**LOCATION:** BBS Survey Route # 5. Wyarno. Each route is 24.5 miles long

**Biological Comments:**

1 individuals observed during Breeding Bird Survey. Each route is 24.5 miles long, with a total of fifty stops located at 0.5 mile intervals along the route.

**OBSERVER:** BBS Vounteer

**Literature Source:**

Sauer, J. R., J. E. Hines, I. Thomas, J. Fallon, and G. Gough. 2000. The North American Breeding Bird Survey, Results and Analysis 1966 - 1999. Version 98.1, USGS Patuxent Wildlife Research Center, Laurel, MD

**Documentation Comments:**

Route location information provided by BBS. Start of route: (44.782, -106.534)

T55 R74 S34. Section may be in error.

**IDENTIFIED:** Y

**PRECISION:** G

**SENSITIVE:** y

**COUNTY:**

**LAT:** 44 46 55

**LONG:** 106 32 28

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14692

**EO Number:**

Year	Month	Day
1989	6	15

**IDENTIFIED:** Y

**PRECISION:** S

**SENSITIVE:** y

**COUNTY:**

**Township Range Section**  
51 82

**LAT:** 44 20 45  
**LONG:** 106 41 23

**LOCATION:** No written description provided.

**Biological Comments:**

1 adult observed. Feeding. Observation on 25 June 1989 as well

**OBSERVER:** WOS, Bruce Johnson

**Literature Source:**

WGFD Wildlife Observation System number 001051423

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14699

**IDENTIFIED:** Y

**EO Number:** 11

**PRECISION:** S

**Year Month Day**  
1988 7 14

**SENSITIVE:** y

**COUNTY:**

**Township Range Section**  
33 79

**LAT:** 42 49 6

**LONG:** 106 18 57

**LOCATION:** No written description provided.

**Biological Comments:**

3 adults observed.

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System number 000813328

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14690

**IDENTIFIED:** Y

**EO Number:**

**PRECISION:** S

**Year Month Day**  
1988 7 3

**SENSITIVE:** n

**COUNTY:**

**Township Range Section**  
41 117 22

**LAT:** 43 29 57

**LONG:** 110 51 59

**LOCATION:** No written description provided. Coordinate falls on Teton County School District; from parcelldd.shp received from Teton County.

**Biological Comments:**

1 adult observed.

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System number 000813368

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14683

**IDENTIFIED:** Y

**EO Number:**

**PRECISION:** S

**Year Month Day**  
1988 6 27

**Township Range Section**  
51 64 2

**LOCATION:** No written description provided.

**Biological Comments:**

1 adult and 1 juvenile observed.

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System number 000813338

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**SENSITIVE:** n

**COUNTY:**

**LAT:** 44 26 12

**LONG:** 104 30 20

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14694

**EO Number:** 4

**Year Month Day**  
1988 6 12

**Township Range Section**  
56 84 0

**LOCATION:** No written description provided.

**Biological Comments:**

1 adult observed. Feeding

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System number 000813358

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**IDENTIFIED:** Y

**PRECISION:** M

**SENSITIVE:** n

**COUNTY:**

**LAT:** 44 49 22

**LONG:** 106 58 25

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14691

**EO Number:**

**Year Month Day**  
1988 6 11

**Township Range Section**  
51 82

**LOCATION:** No written description provided.

**Biological Comments:**

1 adult observed. Feeding

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System number 000813348

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**IDENTIFIED:** Y

**PRECISION:** S

**SENSITIVE:** y

**COUNTY:**

**LAT:** 44 24 51

**LONG:** 106 44 12

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14722

**EO Number:**

**IDENTIFIED:** y

**PRECISION:** M

<b>Year</b>	<b>Month</b>	<b>Day</b>	<b>SENSITIVE:</b>	n
1987	7	13	<b>COUNTY:</b>	SHER
<b>Township</b>	<b>Range</b>	<b>Section</b>	<b>LAT:</b>	44 34 44
T53N	R081W	7	<b>LONG:</b>	106 39 36

**LOCATION:** Sheridan County, NW of Ucross, along "hwy 14 at Piney Creek Bridge."

**Biological Comments:**

"Picked up dead immature" from road.

**OBSERVER:** Earl Tappenden

**Literature Source:**

**Documentation Comments:**

Highways are public property. Data received from H. Downing April 2001.

**YELLOW-BILLED CUCKOO**

<b>RECNUM:</b>	14687	<b>IDENTIFIED:</b>	Y	
<b>EO Number:</b>		<b>PRECISION:</b>	S	
<b>Year</b>	<b>Month</b>	<b>Day</b>	<b>SENSITIVE:</b>	n
1985	8	27	<b>COUNTY:</b>	
<b>Township</b>	<b>Range</b>	<b>Section</b>	<b>LAT:</b>	43 28 53
41	70	34	<b>LONG:</b>	105 15 48

**LOCATION:** No written description provided.

**Biological Comments:**

1 adult observed. Feeding

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System number 000774378

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**YELLOW-BILLED CUCKOO**

<b>RECNUM:</b>	14688	<b>IDENTIFIED:</b>	Y	
<b>EO Number:</b>		<b>PRECISION:</b>	S	
<b>Year</b>	<b>Month</b>	<b>Day</b>	<b>SENSITIVE:</b>	n
1985	6	25	<b>COUNTY:</b>	
<b>Township</b>	<b>Range</b>	<b>Section</b>	<b>LAT:</b>	44 50 11
56	82	11	<b>LONG:</b>	106 41 43

**LOCATION:** No written description provided.

**Biological Comments:**

1 adult observed.

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System number 000616668

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**YELLOW-BILLED CUCKOO**

<b>RECNUM:</b>	14701	<b>IDENTIFIED:</b>	Y
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**EO Number:**

Year	Month	Day
1984	6	15

Township	Range	Section
22	68	15

**LOCATION:** No written description provided.**Biological Comments:**

1 individual(s) of unknown age observed.

**OBSERVER:** WOS**Literature Source:**

WGFD Wildlife Observation System number 002387435

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**PRECISION:** S**SENSITIVE:** n**COUNTY:****LAT:** 41 52 42**LONG:** 104 59 42**YELLOW-BILLED CUCKOO****RECNUM:** 14708**EO Number:** 9

Year	Month	Day
1984	6	14

Township	Range	Section
25	62	33

**LOCATION:** No written description provided.**Biological Comments:**

1 individual(s) of unknown age observed.

**OBSERVER:** WOS**Literature Source:**

WGFD Wildlife Observation System number 002387135

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**IDENTIFIED:** Y**PRECISION:** S**SENSITIVE:** n**COUNTY:****LAT:** 42 5 52**LONG:** 104 18 42**YELLOW-BILLED CUCKOO****RECNUM:** 14707**EO Number:** 9

Year	Month	Day
1984	6	14

Township	Range	Section
25	62	33

**LOCATION:** No written description provided.**Biological Comments:**

1 individual(s) of unknown age observed.

**OBSERVER:** WOS**Literature Source:**

WGFD Wildlife Observation System number 002386865

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**IDENTIFIED:** Y**PRECISION:** S**SENSITIVE:** n**COUNTY:****LAT:** 42 5 52**LONG:** 104 18 42

**YELLOW-BILLED CUCKOO****RECNUM:** 14709**EO Number:** 9

Year	Month	Day
1984	6	14

Township	Range	Section
25	62	33

**LOCATION:** No written description provided.**Biological Comments:**

1 individual(s) of unknown age observed.

**OBSERVER:** WOS**Literature Source:**

WGFD Wildlife Observation System number 002387145

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**IDENTIFIED:** Y**PRECISION:** S**SENSITIVE:** n**COUNTY:****LAT:** 42 5 52**LONG:** 104 18 59**YELLOW-BILLED CUCKOO****RECNUM:** 12146**EO Number:**

Year	Month	Day
1984		

Township	Range	Section
T56N	R80W	31

**LOCATION:** BBS Survey Route # 5. Wyarno. Each route is 24.5 miles long**Biological Comments:**

1 individuals observed during Breeding Bird Survey. Each route is 24.5 miles long, with a total of fifty stops located at 0.5 mile intervals along the route.

**OBSERVER:** BBS Vounteer**Literature Source:**

Sauer, J. R., J. E. Hines, I. Thomas, J. Fallon, and G. Gough. 2000. The North American Breeding Bird Survey, Results and Analysis 1966 - 1999. Version 98.1, USGS Patuxent Wildlife Research Center, Laurel, MD

**Documentation Comments:**

Route location information provided by BBS. Start of route: (44.782, -106.534)

T55 R74 S34. Section may be in error.

**IDENTIFIED:** Y**PRECISION:** G**SENSITIVE:** n**COUNTY:****LAT:** 44 46 55**LONG:** 106 32 28**YELLOW-BILLED CUCKOO****RECNUM:** 14716**EO Number:**

Year	Month	Day
1983	6	29

Township	Range	Section
42	84	15

**LOCATION:** No written description provided.**Biological Comments:**

1 individual(s) of unknown age observed.

**OBSERVER:** WOS**IDENTIFIED:** Y**PRECISION:** S**SENSITIVE:** n**COUNTY:****LAT:** 43 36 6**LONG:** 106 55 57

**Literature Source:**

WGFD Wildlife Observation System number 000559388

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**YELLOW-BILLED CUCKOO****RECNUM:** 14698**EO Number:**

Year	Month	Day
1983	6	22

Township	Range	Section
18	83	36

**LOCATION:** No written description provided.**Biological Comments:**

1 adult observed.

**OBSERVER:** WOS**Literature Source:**

WGFD Wildlife Observation System number 002346025

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**IDENTIFIED:** Y**PRECISION:** S**SENSITIVE:** n**COUNTY:****LAT:** 41 29 13**LONG:** 106 40 51**YELLOW-BILLED CUCKOO****RECNUM:** 14711**EO Number:**

Year	Month	Day
1983	6	20

Township	Range	Section
58	83	0

**LOCATION:** No written description provided.**Biological Comments:**

1 individual(s) of unknown age observed.

**OBSERVER:** WOS, Bob Luce**Literature Source:**

WGFD Wildlife Observation System number 000546318

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**IDENTIFIED:** Y**PRECISION:** M**SENSITIVE:** n**COUNTY:** SHER**LAT:** 44 59 11**LONG:** 106 52 57**YELLOW-BILLED CUCKOO****RECNUM:** 14719**EO Number:**

Year	Month	Day
1983	6	10

Township	Range	Section
T16N	R073W	34

**LOCATION:** Albany County, City of Laramie, vicinity of Washington Park (city park).**Biological Comments:**

Specimen examined and measurements taken by Jason Bennett using Banks technique (Banks 1988). Wing

**IDENTIFIED:** y**PRECISION:** s**SENSITIVE:** n**COUNTY:** ALBA**LAT:** 41 18 24**LONG:** 105 34 21

length: 146mm. Bill length: 20.1. Bill Depth: 5.5. Measurements do not place this individual squarely with the Eastern or Western subspecies.

**OBSERVER:** Anne Boelter and Grace Miller

**Literature Source:**

University of Wyoming Vertebrate Museum

**Documentation Comments:**

Specimen in museum inspected by Jason Bennett (WYNDD)

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14695

**EO Number:**

Year	Month	Day
1982	6	27

Township	Range	Section
30	68	12

**LOCATION:** No written description provided.

**Biological Comments:**

1 adult observed.

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System number 002045535

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**IDENTIFIED:** Y

**PRECISION:** S

**SENSITIVE:** n

**COUNTY:**

**LAT:** 42 34 59

**LONG:** 104 57 28

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14686

**EO Number:**

Year	Month	Day
1982	6	26

Township	Range	Section
52	89	17

**LOCATION:** No written description provided.

**Biological Comments:**

1 adult observed.

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System number 000347042

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**IDENTIFIED:** Y

**PRECISION:** S

**SENSITIVE:** n

**COUNTY:**

**LAT:** 44 29 21

**LONG:** 107 33 42

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14693

**EO Number:**

Year	Month	Day
1982	6	26

Township	Range	Section
58	88	31

**IDENTIFIED:** Y

**PRECISION:** S

**SENSITIVE:** n

**COUNTY:**

**LAT:** 44 57 41

**LONG:** 107 31 45

**LOCATION:** Kearns WHMU. No other written description provided.

**Biological Comments:**

1 adult observed. Territorial. Observation on July 3 1982 as well.

**OBSERVER:** WOS, Jean Daly

**Literature Source:**

WGFD Wildlife Observation System number 000437663

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14710

**EO Number:** 9

Year	Month	Day
1982	6	24

Township	Range	Section
25	62	33

**IDENTIFIED:** Y

**PRECISION:** S

**SENSITIVE:** n

**COUNTY:**

**LAT:** 42 5 52

**LONG:** 104 18 59

**LOCATION:** No written description provided.

**Biological Comments:**

1 individual(s) of unknown age observed. Reproductive (breeding, nesting, etc.)

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System number 002055285

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14715

**EO Number:** 9

Year	Month	Day
1982	6	24

Township	Range	Section
25	62	33

**IDENTIFIED:** Y

**PRECISION:** S

**SENSITIVE:** n

**COUNTY:**

**LAT:** 42 5 52

**LONG:** 104 18 59

**LOCATION:** No written description provided.

**Biological Comments:**

1 individual(s) of unknown age observed. Reproductive (breeding, nesting, etc.)

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System number 002119655

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14717

**EO Number:** 9

Year	Month	Day
1981	7	9

**IDENTIFIED:** Y

**PRECISION:** S

**SENSITIVE:** n

**COUNTY:**

**Township Range Section**  
25 62 33

**LAT:** 42 5 52  
**LONG:** 104 18 59

**LOCATION:** No written description provided.

**Biological Comments:**

2 individual(s) of unknown age observed.

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System number 001879725

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14684

**IDENTIFIED:** Y

**EO Number:**

**PRECISION:** S

**Year Month Day**  
1981 6 12

**SENSITIVE:** n

**COUNTY:**

**Township Range Section**  
31 69 34

**LAT:** 42 36 47

**LONG:** 105 7 28

**LOCATION:** No written description provided.

**Biological Comments:**

1 adult observed.

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System number 001873085

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**YELLOW-BILLED CUCKOO**

**RECNUM:** 13702

**IDENTIFIED:**

**EO Number:** 7

**PRECISION:** G

**Year Month Day**  
1981

**SENSITIVE:** n

**COUNTY:**

**Township Range Section**  
T21N R109W 5

**LAT:** 41 49 37

**LONG:** 109 48 3

**LOCATION:** BBS Survey Route # 195. Seedskadee. Each route is 24.5 miles long

**Biological Comments:**

2 individuals observed during Breeding Bird Survey. Each route is 24.5 miles long, with a total of fifty stops located at 0.5 mile intervals along the route.

**OBSERVER:** BBS Vounteer

**Literature Source:**

Sauer, J. R., J. E. Hines, I. Thomas, J. Fallon, and G. Gough. 2000. The North American Breeding Bird Survey, Results and Analysis 1966 - 1999. Version 98.1, USGS Patuxent Wildlife Research Center, Laurel, MD

**Documentation Comments:**

Route location information provided by BBS. Start of route: (41.827, -109.801)  
T19 R108 S36. Section may be in error.

**YELLOW-BILLED CUCKOO****RECNUM:** 14714**EO Number:**

Year	Month	Day
1980	7	16

Township	Range	Section
45	94	31

**LOCATION:** No written description provided.**Biological Comments:**

1 individual(s) of unknown age observed. Reproductive (breeding, nesting, etc.)

**OBSERVER:** WOS**Literature Source:**

WGFD Wildlife Observation System number 000279772

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**IDENTIFIED:** Y**PRECISION:** S**SENSITIVE:** n**COUNTY:****LAT:** 43 49 23**LONG:** 108 11 4**YELLOW-BILLED CUCKOO****RECNUM:** 14685**EO Number:** 5

Year	Month	Day
1980	6	26

Township	Range	Section
12	113	2

**LOCATION:** No written description provided.**Biological Comments:**

1 adult observed. Courtship

**OBSERVER:** WOS**Literature Source:**

WGFD Wildlife Observation System number 002370414

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**IDENTIFIED:** Y**PRECISION:** S**SENSITIVE:** n**COUNTY:****LAT:** 41 3 21**LONG:** 110 5 59**YELLOW-BILLED CUCKOO****RECNUM:** 14705**EO Number:**

Year	Month	Day
1980	6	26

Township	Range	Section
15	114	

**LOCATION:** No written description provided.**Biological Comments:**

1 individual(s) of unknown age observed.

**OBSERVER:** WOS**Literature Source:**

WGFD Wildlife Observation System number 000686178

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**IDENTIFIED:** Y**PRECISION:** S**SENSITIVE:** y**COUNTY:****LAT:** 41 15 56**LONG:** 110 14 56

**YELLOW-BILLED CUCKOO****RECNUM:** 14697**EO Number:** 1

Year	Month	Day
1980	6	18

Township	Range	Section
50	93	9

**LOCATION:** No written description provided.**Biological Comments:**

1 adult observed. Territorial

**OBSERVER:** WOS**Literature Source:**

WGFD Wildlife Observation System number 000360288

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**IDENTIFIED:** Y**PRECISION:** S**SENSITIVE:** n**COUNTY:****LAT:** 44 18 53**LONG:** 108 3 2**YELLOW-BILLED CUCKOO****RECNUM:** 14696**EO Number:** 1

Year	Month	Day
1980	6	18

Township	Range	Section
50	93	9

**LOCATION:** No written description provided.**Biological Comments:**

1 adult observed. Feeding

**OBSERVER:** WOS**Literature Source:**

WGFD Wildlife Observation System number 000360278

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**IDENTIFIED:** Y**PRECISION:** S**SENSITIVE:** n**COUNTY:****LAT:** 44 18 53**LONG:** 108 3 2**YELLOW-BILLED CUCKOO****RECNUM:** 14704**EO Number:** 8

Year	Month	Day
1980	6	11

Township	Range	Section
23	62	

**LOCATION:** No written description provided.**Biological Comments:**

1 individual(s) of unknown age observed.

**OBSERVER:** WOS**Literature Source:**

WGFD Wildlife Observation System number 000674838

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**IDENTIFIED:** Y**PRECISION:** S**SENSITIVE:** y**COUNTY:****LAT:** 41 55 23**LONG:** 104 16 30

**YELLOW-BILLED CUCKOO****RECNUM:** 14397**EO Number:** 5**Year Month Day**  
1980**Township Range Section**  
T13N R113W 8**IDENTIFIED:****PRECISION:** G**SENSITIVE:** n**COUNTY:****LAT:** 41 7 2**LONG:** 110 10 15**LOCATION:** BBS Survey Route # 93. Mountain View. Each route is 24.5 miles long**Biological Comments:**

1 individuals observed during Breeding Bird Survey. Each route is 24.5 miles long, with a total of fifty stops located at 0.5 mile intervals along the route.

**OBSERVER:** BBS Vounteer**Literature Source:**

Sauer, J. R., J. E. Hines, I. Thomas, J. Fallon, and G. Gough. 2000. The North American Breeding Bird Survey, Results and Analysis 1966 - 1999. Version 98.1, USGS Patuxent Wildlife Research Center, Laurel, MD

**Documentation Comments:**

Route location information provided by BBS. Start of route: (41.1175, -110.171)  
T3 R4 S22. Section may be in error.

**YELLOW-BILLED CUCKOO****RECNUM:** 9928**EO Number:****Year Month Day**  
1980**Township Range Section**  
T23N R060W 21**IDENTIFIED:****PRECISION:** G**SENSITIVE:** n**COUNTY:****LAT:** 41 57 28**LONG:** 104 4 40**LOCATION:** BBS Survey Route # 28. Yoder. Each route is 24.5 miles long**Biological Comments:**

1 individuals observed during Breeding Bird Survey. Each route is 24.5 miles long, with a total of fifty stops located at 0.5 mile intervals along the route.

**OBSERVER:** BBS Vounteer**Literature Source:**

Sauer, J. R., J. E. Hines, I. Thomas, J. Fallon, and G. Gough. 2000. The North American Breeding Bird Survey, Results and Analysis 1966 - 1999. Version 98.1, USGS Patuxent Wildlife Research Center, Laurel, MD

**Documentation Comments:**

Route location information provided by BBS. Start of route: (41.958, -104.078)  
T20 R98 S35. Section may be in error.

**YELLOW-BILLED CUCKOO****RECNUM:** 14706**EO Number:** 7**Year Month Day**  
1979 7 7**Township Range Section**  
20 109 16**IDENTIFIED:** Y**PRECISION:** S**SENSITIVE:** n**COUNTY:****LAT:** 41 42 51**LONG:** 109 43 5**LOCATION:** No written description provided.

**Biological Comments:**

1 individual(s) of unknown age observed. Courtship

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System number 001218314

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14713

**EO Number:** 7

Year	Month	Day
1979	7	7

Township	Range	Section
20	109	5

**LOCATION:** No written description provided.

**Biological Comments:**

1 individual(s) of unknown age observed. Courtship

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System number 001225414

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**IDENTIFIED:** Y

**PRECISION:** S

**SENSITIVE:** n

**COUNTY:**

**LAT:** 41 44 18

**LONG:** 109 44 13

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14703

**EO Number:** 6

Year	Month	Day
1979	7	5

Township	Range	Section
15	118	18

**LOCATION:** No written description provided.

**Biological Comments:**

1 individual(s) of unknown age observed. Courtship

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System number 001132614

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**IDENTIFIED:** Y

**PRECISION:** S

**SENSITIVE:** n

**COUNTY:**

**LAT:** 41 16 44

**LONG:** 110 45 29

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14712

**EO Number:** 6

Year	Month	Day
1979	7	5

Township	Range	Section
15	118	18

**IDENTIFIED:** Y

**PRECISION:** S

**SENSITIVE:** n

**COUNTY:**

**LAT:** 41 16 33

**LONG:** 110 45 59

**LOCATION:** No written description provided.

**Biological Comments:**

1 individual(s) of unknown age observed. Courtship

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System number 001130614

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14718

**IDENTIFIED:** Y

**EO Number:** 6

**PRECISION:** S

Year	Month	Day
1979	7	5

**SENSITIVE:** n

**COUNTY:**

Township	Range	Section
15	118	18

**LAT:** 41 16 40

**LONG:** 110 46 8

**LOCATION:** No written description provided.

**Biological Comments:**

2 individual(s) of unknown age observed.

**OBSERVER:** WOS

**Literature Source:**

WGFD Wildlife Observation System number 000692688

**Documentation Comments:**

Spreadsheet received from Brad Rodgers March 2001.

**YELLOW-BILLED CUCKOO**

**RECNUM:** 8411

**IDENTIFIED:**

**EO Number:** 6

**PRECISION:** G

Year	Month	Day
1979		

**SENSITIVE:** n

**COUNTY:**

Township	Range	Section
T16N	R118W	12

**LAT:** 41 22 37

**LONG:** 110 39 46

**LOCATION:** BBS Survey Route # 22. Cumberland. Each route is 24.5 miles long

**Biological Comments:**

2 individuals observed during Breeding Bird Survey. Each route is 24.5 miles long, with a total of fifty stops located at 0.5 mile intervals along the route.

**OBSERVER:** BBS Vounteer

**Literature Source:**

Sauer, J. R., J. E. Hines, I. Thomas, J. Fallon, and G. Gough. 2000. The North American Breeding Bird Survey, Results and Analysis 1966 - 1999. Version 98.1, USGS Patuxent Wildlife Research Center, Laurel, MD

**Documentation Comments:**

Route location information provided by BBS. Start of route: (41.377, -110.663)  
T14 R82 S18. Section may be in error.

**YELLOW-BILLED CUCKOO**

**RECNUM:** 13701

**IDENTIFIED:**

**EO Number:** 7**Year Month Day**  
1979**Township Range Section**  
T21N R109W 5**PRECISION:** G**SENSITIVE:** n  
**COUNTY:****LAT:** 41 49 37**LONG:** 109 48 3**LOCATION:** BBS Survey Route # 195. Seedskadee. Each route is 24.5 miles long**Biological Comments:**

2 individuals observed during Breeding Bird Survey. Each route is 24.5 miles long, with a total of fifty stops located at 0.5 mile intervals along the route.

**OBSERVER:** BBS Vounteer**Literature Source:**

Sauer, J. R., J. E. Hines, I. Thomas, J. Fallon, and G. Gough. 2000. The North American Breeding Bird Survey, Results and Analysis 1966 - 1999. Version 98.1, USGS Patuxent Wildlife Research Center, Laurel, MD

**Documentation Comments:**Route location information provided by BBS. Start of route: (41.827, -109.801)  
T19 R108 S36. Section may be in error.**YELLOW-BILLED CUCKOO****RECNUM:** 14721**EO Number:****Year Month Day**  
1978 7 12**Township Range Section**  
A54N R077W 27**IDENTIFIED:** y**PRECISION:****SENSITIVE:** n**COUNTY:** SHER**LAT:** 44 38 2**LONG:** 106 7 0**LOCATION:** "Powder River near Arvada."**Biological Comments:**

Observation (unknown number). Observations in May and June 1977, and June 1975 as well.

**OBSERVER:** Marian Collins**Literature Source:****Documentation Comments:**

Data received from H. Downing April 2001.

**YELLOW-BILLED CUCKOO****RECNUM:** 13700**EO Number:** 7**Year Month Day**  
1977**Township Range Section**  
T21N R109W 5**IDENTIFIED:****PRECISION:** G**SENSITIVE:** n**COUNTY:****LAT:** 41 49 37**LONG:** 109 48 3**LOCATION:** BBS Survey Route # 195. Seedskadee. Each route is 24.5 miles long**Biological Comments:**

1 individuals observed during Breeding Bird Survey. Each route is 24.5 miles long, with a total of fifty stops located at 0.5 mile intervals along the route.

**OBSERVER:** BBS Vounteer**Literature Source:**

Sauer, J. R., J. E. Hines, I. Thomas, J. Fallon, and G. Gough. 2000. The North American Breeding Bird Survey,

Results and Analysis 1966 - 1999. Version 98.1, USGS Patuxent Wildlife Research Center, Laurel, MD

**Documentation Comments:**

Route location information provided by BBS. Start of route: (41.827, -109.801)  
T19 R108 S36. Section may be in error.

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14720

**EO Number:**

**Year Month Day**  
1961 6 12

**Township Range Section**  
T16N R073W 34

**LOCATION:** Albany County, "Laramie."

**Biological Comments:**

Specimen examined and measurements taken by Jason Bennett using Banks technique (Banks 1988). Wing length: 143mm. Bill length: 19.0mm. Bill Depth: 5.7. Measurements do not place this individual squarely in the Eastern or Western subspecies.

**OBSERVER:** Carl Cinnamon

**Literature Source:**

University of Wyoming Vertebrate Museum

**Documentation Comments:**

Specimen in museum inspected by Jason Bennett (WYNDD)

**IDENTIFIED:** y

**PRECISION:** G

**SENSITIVE:** n

**COUNTY:** ALBA

**LAT:** 41 18 24

**LONG:** 105 34 21

**YELLOW-BILLED CUCKOO**

**RECNUM:** 14723

**EO Number:**

**Year Month Day**  
1983

**Township Range Section**  
T01N R004E 34

**LOCATION:** Fremont County, the City of Riverton, observation placed at the Fremont County Fairground.

**Biological Comments:**

At least one individual observed. R. Scott suggests that there has been other sighting in Riverton in the past.

**OBSERVER:** Richard Scott

**Literature Source:**

**Documentation Comments:**

Data received by email from R. Scott March 2001. Date approximate.

**IDENTIFIED:** y

**PRECISION:** M

**SENSITIVE:** n

**COUNTY:** FREM

**LAT:** 43 0 50

**LONG:** 108 23 6

Appendix II

Yellow-billed Cuckoo Survey and Monitoring Protocol

Draft**YELLOW-BILLED CUCKOO SURVEY AND MONITORING PROTOCOL FOR CALIFORNIA**

**Prepared by: Stephen A. Laymon Ph.D., Research Wildlife Ecologist**  
**P.O. Box 1236, Weldon, CA 93283**  
**Telephone: (760) 378-4116 E-mail: slaymon@lightspeed.net**

**Prepared: 4 June 1998**  
**Revised: 13 July 1998**

**Introduction:** In the western United States a petition has recently (February 1998) been filed to list the western subspecies of the Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*) as a Federally Endangered Species. The species is extremely rare in California, with less than 50 pairs recorded during the last statewide survey in 1986-1987. There is no indication that the population has increased since that survey. The population in California is concentrated along the Sacramento River from Red Bluff to Colusa and along the South Fork Kern River near Weldon. Other breeding locations of small numbers of pairs are along the Feather River from Oroville to Verona, along the Owens River, along the Amargosa River, and in the Prado Flood Control Basin. The western subspecies, officially known as the California Yellow-billed Cuckoo, is also sometimes referred to as the Western Yellow-billed Cuckoo. The cuckoo has a large home range, calls infrequently when mated, and is rarely detected visually. It is also territorial only in a limited sense. These factors render traditional bird surveys methods, such as point counts and transects, of limited value to determine the presence/absence or abundance of the species. Playback surveys are the recommended method for conducting surveys. Because of large and overlapping home ranges, locating all nests in a population is the only way to census (i.e. to do a complete count of) the population.

**Survey Method:** Playback of the cuckoo's pair contact call ("kowlp" call) has proved to be the best method to survey the species. The tape-recorded call should be able to be easily heard for a minimum of 100 m. I recommend a dual speaker, sports tape recorder, like the Sanyo "Outsider" or Sony "Outback". These recorders have both the power to project the required distance, lack of distortion at high volume, and are rugged enough to stand up under field conditions. I have been using a Sanyo "Outsider" for the past 10 years with no trouble, but have been unable to obtain a replacement. If you find a source please spread the word.

Any recording of the "kowlp" call is fine. I always use the recording from the Peterson Field Guide tape because it is distinctive and I can tell the difference between a real cuckoo and another cuckoo surveyor's tape. Never use a tape of the cooing call, which is given only by unmated males, to survey for cuckoos. This call will reduce the response rate of mated cuckoos below what it would be if no call were used.

Surveys should be conducted between the hours of 6:30 and noon. The hot part of the day should be avoided as response rate declines sharply. I would avoid conducting surveys when the temperature exceeds 100 degrees. Surveys in the late afternoon (6:00) and evening (8:00) are also possible but the survey results have not been compared to known populations. Survey stops located every 200 m along the forest edge are recommended. If the forest patch is greater than 100 m in width, it will be necessary to make two or more transects through the patch. In some locations, surveys can be conducted from a dry creek bed with up to 100 m of habitat on either

side. No part of the patch should be more than 100 m from a survey location. In terms of the number of survey stations/40ha (100 acres), 12 stops would be needed for a square habitat patch (633 m x 633 m), 10 stops for a 200 m x 2000 m patch, and 20 stops for a 100 m x 4000 m patch.

The recorded call should be played about 10 times at each stop, with about 30-60 second pauses between each call. An alternative is to stop every 100 m and play the tape 5 times at each stop. I have not found one method to be superior to another. The pauses between the calls are extremely important. Cuckoos rarely respond instantly and usually wait 30 seconds or more before responding. If you are walking, talking, or playing the tape you will probably not hear the response. Approximately 4 km of habitat can be surveyed per morning.

Three surveys of your study area should be conducted during the breeding season. In California, surveys should not be conducted before 15 June, because most cuckoos have not arrived before that date. Surveys should not be conducted after 10 August because many cuckoos have left their breeding areas by that date and the remaining cuckoos have become very quiet and rarely respond. Surveys should be conducted 10 to 14 days apart between the 15 June to 10 August period. This spacing allows the surveyor to hit the various stages of the nesting cycle for any given pair, increasing the chance of response.

Surveys should not be carried out in winds over 7 mph because this reduces both the cuckoo's response rate and your ability to hear the response. Likewise, surveys should not be conducted when it is raining. Rain is generally not a problem in California during the survey period.

**Survey Results:** With surveys for sensitive species, the problem of presence vs. absence vs. not found always arises. A response by a cuckoo during a survey of course indicates that a cuckoo is present at the site. Surveys conducted at sites where the population is known indicate that with three surveys there is approximately a 95% chance of detecting at least one member of a pair. Therefore, there is approximately a 5% chance of cuckoos being present at the site but not being detected during the survey.

The absence (or presumed absence) of cuckoos in any given year does not indicate that the site is never used by cuckoos. Some sites in California have been unoccupied by breeding pairs for five or six years only to be reoccupied. In addition, numbers of pairs can vary greatly from year to year at even the best sites. At the South Fork Kern River, from 1985 to 1997, the cuckoo population has varied from a low of three pairs to a high of 23 pairs. We recommend that surveys be conducted for a minimum of three years to capture the variation in population size and to conclude that cuckoos are actually absent.

**Cuckoo Response and Call Context:** Cuckoos can respond to the taped calls in several ways. How they respond depends on their breeding status, breeding season phenology, and individual variation.

**Unmated male cuckoos** will often fly into where the observer is located and, after one or two minutes, will respond with a cooing call. The cooing call is a mate attraction call and is therefore the song of the cuckoo. To the inexperienced, the call could easily be mistaken for a Mourning Dove. Experienced observers sometimes mistake this call for the call of a Greater Roadrunner. The main difference is that the Roadrunner call descends while each note of the Yellow-billed Cuckoo call is on the same pitch. This cooing can continue indefinitely and unmated male cuckoos will sometimes follow a surveyor for several hours. It is sometimes necessary to skip a survey location to lose these unmated males.

**Unmated female cuckoos**, when they respond at all, often fly in and silently observe the surveyor. On a few occasions I have had them respond with a low guttural call similar to, but much lower and hoarser than cooing.

**Mated male and female cuckoos** sometimes also respond by flying in silently, but usually they respond from a ways off with a contact “kowlp” call. Mated cuckoos never coo. Both male and female cuckoos make a “kowlp” call and the sexes can only be told apart by call with much experience. In the vicinity of an active nest both male and female will make a soft knocking call which is used to tell the mate and young that a predator is near. This call can be made in response to your presence or to the presence of a hawk or owl.

**Juvenile cuckoos** that are still dependent on the adults for food will respond with a soft clucking call, which tells the parents their location. As the young get older (3-4 weeks out of the nest), the clucking gets louder and begins to resemble the parents “kowlp” call.

**Nest Location and Monitoring:** Nest location is the only method to determine an exact count (census) of Yellow-billed Cuckoo populations. I recommend that nest location only be done after training by someone experienced with the species. Nest finding by an untrained person, unfamiliar with the subtleties of cuckoo behavior and calls, could result in nest loss or abandonment. Locating nests of Yellow-billed Cuckoos is very difficult and time consuming. An average of 4 person days, by experienced cuckoo nest finders, is needed to locate a nest. Cuckoos view humans as predators and are therefore very wary around the nest and literally will not go to a nest if they know you are watching them. This accompanied with the large home range (up to 100 acres) and the dense vegetation in which they nest make nest finding extremely difficult. Nest finding is easier during the nest building stage, but is not recommended because of the possibility of abandonment. The optimum time to locate nests, both from the standpoint of ease of nest finding and the least likelihood of nest abandonment, is while they are feeding the young. Once nests are found, they should be checked only when the parents are absent.

**Surveyor qualifications:** It is recommended that those who are planning to survey for this species should attend a training course before conducting surveys. This is needed because of the cuckoo’s cryptic nature, the difficulty of identification of some of its calls, and the need to understand call.

Verified sightings should be considered sightings that have been made by field biologists who have experience with the species. The best way to get experience is to take a cuckoo workshop or accompany trained observers on a survey. Many highly skilled birdwatchers and field ornithologists also have the necessary knowledge to positively identify this species. In the case of untrained and inexperienced observers, a tape recording or photo would be necessary for the sighting to be considered verified.

### **Further Reading:**

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