

CANDIDATE ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: *Coccyzus americanus*

COMMON NAME: Yellow-billed Cuckoo, Western United States DPS

LEAD REGION: Region 1

INFORMATION CURRENT AS OF: January 31, 2003

STATUS/ACTION:

New candidate

Continuing candidate

Non-petitioned

Petitioned - Date petition received: February 9, 1998

90-day positive - FR date: February 17, 2000

12-month warranted but precluded - FR date: July 25, 2001

Is the petition requesting a reclassification of a listed species?

Listing priority change

Former LP:

New LP:

Latest Date species became a Candidate: July 25, 2001

Candidate removal: Former LP:

A - Taxon more abundant or widespread than previously believed or not subject to a degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

F - Range is no longer a U.S. territory.

I - Insufficient information on biological vulnerability and threats to support listing.

M - Taxon mistakenly included in past notice of review.

N - Taxon may not meet the Act's definition of "species."

X - Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Family Cuculidae and Order Cuculiformes

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: California, Oregon, Washington, Arizona, Colorado, Montana, Idaho, Nevada, Wyoming, New Mexico, Texas, Utah, British Columbia, and Mexico. The species over-winters from northern South America south to northern Argentina.

CURRENT STATES/ COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE: California, Oregon, Washington, Arizona, Colorado, Montana, Idaho, Nevada, Wyoming, New Mexico, Texas, Utah, British Columbia, and Mexico. The species over-winters from northern South America south to northern Argentina.

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## BIOLOGICAL INFORMATION:

### Species Description

The yellow-billed cuckoo (*Coccyzus americanus*) is a member of the avian family Cuculidae and order Cuculiformes. The approximate 128 members of Cuculidae share the common feature of a zygodactyl foot, in which two toes point forwards and two toes point backwards. Most species have moderate to heavy bills, somewhat elongated bodies, a ring of colored bare skin around the eye, and loose plumage. Six species of Cuculidae breed in the United States; two of these species breed west of the Continental Divide -- the yellow-billed cuckoo and the greater roadrunner.

The yellow-billed cuckoo is a medium-sized bird of about 30 centimeters (12 inches) in length, and weighing about 60 grams (2 ounces). The species has a slender, long-tailed profile, with a fairly stout and slightly down-curved bill, which is blue-black with yellow on the basal half of the lower mandible. Plumage is grayish-brown above and white below, with rufous primary flight feathers. The tail feathers are boldly patterned with black and white below. The legs are short and bluish-gray, and adults have a narrow, yellow eye ring. Juveniles resemble adults, except the tail patterning is less distinct, and the lower bill may have little or no yellow. Males and females differ slightly. Males tend to have a slightly larger bill, and the white in the tail tends to form oval spots, whereas in females the white spots tend to be connected and less distinct (Hughes 1999).

Western cuckoos breed in large blocks of riparian habitats (particularly woodlands with cottonwoods (*Populus fremontii*) and willows (*Salix sp.*), while eastern cuckoos breed in a wider range of habitats, including deciduous woodlands and parks (Ehrlich et al. 1988). Dense understory foliage appears to be an important factor in nest site selection, while cottonwood trees are an important foraging habitat in areas where the species has been studied in California (Laymon et al. 1993). Clutch size is usually two or three eggs, and development of the young is very rapid, with a breeding cycle of 17 days from egg-laying to fledging of young. Although yellow-billed cuckoos usually raise their own young, they are facultative brood parasites, occasionally laying eggs in the nests of other yellow-billed cuckoos or of other bird species (Hughes 1997).

We consider the yellow-billed cuckoos that occur in the western United States as a distinct population segment (DPS). The area for this DPS is west of the crest of the Rocky Mountains. For the northern tier of Rocky Mountain states (Montana, Wyoming, northern and central Colorado), the crest coincides with the Continental Divide. In the southern tier of Colorado and New Mexico, the crest coincides with the eastern boundary of the upper Rio Grande drainage, including the Sangre de Cristo Mountains and excluding the drainage of the Pecos River. In west Texas, the DPS boundary is the line of mountain ranges that form a southeastern extension of the Rocky Mountains to the Big Bend area of west Texas, and that form the western boundary of the Pecos River drainage.

### Taxonomy

Ridgway (1887) separated the yellow-billed cuckoo into eastern and western subspecies, based on western birds being “larger, with proportionately larger and stouter bill.” Wetmore (1968) added that western birds are slightly more gray above, and eastern birds more brown. Ridgway assigned birds from the area north and west from extreme west Texas to the Pacific Coast to the subspecies *C. a. occidentalis*, and other cuckoos in North America to *C. a. americanus*. Ridgway’s western subspecies included birds from the Great Basin portions of Colorado and Wyoming, west and north to the Pacific Coast and southwestern British Columbia. The two subspecies were generally included in ornithological treatments through the 1960s (e.g., AOU 1957; Oberholser and Kincaid 1974). Many ornithologists, however, have questioned the separation of the species into two subspecies (Todd and Carriker 1922; Swarth 1929; Van Tyne and Sutton 1937; Bent 1940; Monson and Phillips 1981), citing the small magnitude and inconsistency of differences between eastern and western cuckoos, and the broad overlap in the size of eastern and western individuals. During this time, however, there was no systematic analysis of geographic variation and the yellow-billed cuckoo subspecies question. Since 1983, AOU checklists (the recognized authority for taxonomy of North American birds) have not used subspecies names for any of the bird species in the checklist, stating practical grounds and that the validity of many described avian subspecies needs to be evaluated, as does the potential for unrecognized subspecies (AOU 1983, 1998). The most recent checklist (AOU 1998) refers readers to the 1957 checklist for subspecies taxonomy, while noting, as stated above, the questionable validity of many subspecies. The AOU Checklist Committee (which makes taxonomic decisions for North American birds) has begun the process of reviewing the taxonomic status of subspecies for the North American families of birds, a task that is expected to take at least several years (R. Banks, chair of AOU Classification and Nomenclature Committee [North America], pers. comm., 1999).

Yellow-billed cuckoo taxonomy was first reviewed in the late 1980s, when the Service requested that Dr. Banks, an avian taxonomist, evaluate the validity of the cuckoo subspecies. This request was in response to the 1986 petition to list the cuckoo in the states of California, Washington, Oregon, Idaho, and Nevada. Banks compared three morphological characteristics (bill length, depth of upper mandible, and wing length) of almost 700 adult specimens of yellow-billed cuckoos and visually examined the colors of specimens. He found: 1) no pattern of geographic variation in color, 2) substantial overlap between eastern and western birds in wing length, bill length and mandible depth, and 3) no significant differences for these three characteristics. He concluded that the data did not justify the separation into eastern and western subspecies (Banks 1988). Subsequently, statistical errors were discovered in Bank’s study (Spiller 1988), and a reanalysis of the same data indicated statistically significant differences between eastern and western cuckoos ( $p < 0.001$ ), for the three characteristics measured by Banks. Banks published a correction to his earlier paper (Banks 1990), acknowledging the computational error, and stating that the “statistical difference cannot be equated to a biological or practical difference.” In support of this, he cited the small differences between mean measurements, the large degree of overlap between eastern and western birds in the ranges of measurements for the three characteristics he measured, and the sensitivity of the statistical procedure to detect very small differences as “significant,” given the large sample sizes. Banks concluded that his fundamental finding remained unchanged, that is, separation into subspecies was not warranted by the morphological data, and that all yellow-billed cuckoos in North America should be classified simply as *Coccyzus americanus*.

Banks provided his data to two avian ecologists (Franzreb and Laymon 1993) who analyzed the same data set, supplemented by measurements for a fourth characteristic (tail length), and from a small number of additional specimens of western birds. Franzreb and Laymon (1993) noted statistical errors by Banks (1988), finding that western birds are larger than eastern birds, and that one could separate a majority of western cuckoos from eastern cuckoos using discriminant analysis. Franzreb and Laymon (1993) also considered behavioral and ecological differences between western and eastern birds, and found evidence of differences in the timing of migration and breeding. They concluded that 1) “the recognition of subspecies on the basis of measurements of existing specimens is equivocal”, 2) study of geographical variation in vocalizations, bill color, and genetics was warranted, 3) the two subspecies should be retained pending the above studies, and 4) “because the western cuckoo is so critically endangered . . . changes in its classification should be made only after the best possible study.” Banks did not respond in print to their paper, but has stated that his conclusion remains unchanged (R. Banks, pers. comm., 1999).

### Historical and Current Range/Distribution

Based on historic accounts, the species was widespread and locally common in California and Arizona, locally common in a few river reaches in New Mexico, locally common in Oregon and Washington, generally local and uncommon in scattered drainages of the arid and semiarid portions of western Colorado, western Wyoming, Idaho, Nevada, and Utah, and probably uncommon and local in British Columbia. Hughes (1999) summarizes the species’ historic range and status in these areas, which are described in detail below.

#### California

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In California prior to the 1930s, the species was widely distributed in suitable river bottom habitats, and was locally common (Grinnell and Miller 1944; Small 1994). Yellow-billed cuckoos nested primarily in coastal counties from San Diego County near the Mexico border to Sonoma County in the San Francisco Bay region, in the Central Valley from Kern County through Shasta County, and along the lower Colorado River ( Dawson 1923; Grinnell and Miller 1944; Gaines and Laymon 1984; Small 1994). Cuckoos also bred locally elsewhere in the state, including in Inyo, San Bernardino, and Siskiyou counties (Grinnell and Miller 1944).

The early literature relating to the cuckoo in California has been summarized and evaluated by Gaines (1974), Gaines and Laymon (1984), and Hughes (1999). Collectively, they report dozens of locations where the species was historically reported and/or collected, sometimes in apparent abundance, but not subsequently found. Laymon and Halterman (1987b) estimate that in California the species’ range is now about 30 percent of its historical extent. Hughes (1999) provides an estimate of 15,000 pairs of breeding birds for the California breeding population during the late 19th century. Gaines (1974) believed that pre-development cuckoo populations in California were even greater than implied by the early literature, due to the species’ inconspicuous behavior and the fact that large tracts of floodplain riparian habitat had already been removed for development before the first records and accounts of the species began appearing in literature. There is clearly a broad unanimity among modern investigators that a catastrophic decline of the cuckoo in California occurred following the start of the major era of development beginning about the mid-1800s (Gaines and Laymon 1984; Laymon and Halterman 1987a, b; Launer et al. 1990).

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The species was listed by the State of California as threatened in 1971 and was reclassified as endangered in 1987. Based on a 1986-87 statewide survey, only three areas in the State support more than about five breeding pairs on a regular basis: the Sacramento River roughly between Colusa and Red Bluff; the South Fork of the Kern River upstream of Lake Isabella; and the lower Colorado River (Laymon and Halterman 1987a, b). Laymon and Halterman (1987a) estimated 31-42 breeding pairs in the State, a decline of 66-81 percent from a 1977 survey (Gaines 1974; Gaines and Laymon 1984). The lower Colorado River, on the California-Arizona border, supported an estimated 180-240 pairs in 1976-1977, a number which had declined by an estimated 80-90 percent in 1986 (Laymon and Halterman 1987a); one study (Rosenberg *et al.* 1991) estimated a decline of 93 percent over this period, from an initial 242 pairs in 1976-1977. These declines coincided with habitat losses resulting from high water levels of long duration in 1983-1984 and 1986 (Laymon and Halterman 1987b; Rosenberg *et al.* 1991). Final results from a Service-funded 1999 statewide survey indicate that cuckoo numbers in the Sacramento Valley and along the Kern River are comparable to numbers from the 1980s, while only two pairs were located on the California side of the Colorado River. No pairs were found in the part of the state west of the Colorado River and south of the Kern River (M. Halterman, pers. comm., 1999).

An example of the species' decline in California is the San Joaquin Valley. Cuckoos had been recorded from every county in the San Joaquin Valley region except Kings County and were locally common as a breeding bird at least in San Joaquin, Kern, Fresno, and Stanislaus counties (Gaines and Laymon 1984). Despite surveys for the species (Laymon and Halterman 1987a), there have been few records from the San Joaquin Valley since the 1960s. If the species still breeds there, the number of breeding pairs is very small (Gaines and Laymon 1984; Laymon and Halterman 1987a).

### Pacific Northwest

In the Pacific Northwest, the species was formerly fairly common locally in willow bottoms along Willamette and Columbia Rivers in Oregon, and in the Puget Sound lowlands and along the lower Columbia River in Washington (Gabrielson and Jewett 1940; Jewett *et al.* 1953; Roberson 1980; Marshall 1996). The species was also found locally in southeast British Columbia (Hughes 1999), but the available data are not adequate to determine historic abundance. The species was rare east of the Cascade Mountains in these States and provinces. The last confirmed breeding records were in the 1930s in Washington. It may now be extirpated from Washington. The species is ranked as critically imperiled as a breeding bird in Washington and is under review by the Washington Department of Fish and Wildlife for State listing (Washington Natural Heritage Program 2000).

In Oregon, the last confirmed breeding records were in the 1940s in Oregon. However, four cuckoo sightings were made west of the Cascade Mountains between 1970 and 1994, and at least 20 records east of the Cascades (Gilligan 1994). A few pairs may nest very locally east of Cascades in Oregon. A 1988 survey in eastern Oregon and Klamath County located no birds, but identified potential breeding habitat along the lower Owyhee River (Littlefield 1988). Most recent records were from May and June of 1999 (Johnson and O'Neil 2001) and a single yellow-billed cuckoo was sited during the breeding season (June 26-27 1999) along Bonita Road in Malheur County. It is believed that this species has been regularly sited (without confirmed nesting) at the Malheur National Wildlife Refuge (B. Altman, pers. comm., 2001).

The species occurred in southwest British Columbia (Victoria, Kamloops, Chilliwack) (Bent 1940), but was apparently never common; the last confirmed breeding was in 1920s. The species has been recorded twice in British Columbia since the 1920s (Siddle 1992), and is considered extirpated (British Columbia Conservation Data Centre 1999; Hughes 1999).

## Arizona

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Arizona probably contains the largest remaining cuckoo population among States west of the Rocky Mountains. The species was historically widespread and locally common (Phillips *et al.* 1964; Monson and Phillips 1981; Groschupf 1987). One hundred and sixty-eight cuckoo pairs and 80 single birds were located in Arizona in 1999, based on preliminary results from a state-wide survey which covered 426 kilometers (km) [265 miles (mi)] of river and creek bottoms (R. Magill, pers. comm., 1999). From these results, it is evident that cuckoo numbers in 1999 are substantially less than some previous estimates for Arizona, including a 1976 estimate of 846 pairs for the lower Colorado River and five major tributaries 1976 (Groschupf 1987). Losses of riparian habitats from historic levels have been substantial in Arizona (Rosenberg *et al.* 1991; Ohmart 1994; Noss *et al.* 1995). Losses have been greatest at lower elevations [below about 914 meters elevation (3,000 feet)] along the Lower Colorado River and its major tributaries, which have been strongly affected by upstream dams, flow alterations, channel modification, and clearing of land for agriculture (Groschupf 1987). As habitat has declined, cuckoo numbers have likely declined, as has been documented for the lower Colorado River (Rosenberg *et al.* 1991), and described above for California. Following the high water levels of 1983-1984 and 1986, cuckoo numbers also declined by 70-75 percent on the Bill Williams River delta, which abuts the lower Colorado River (Rosenberg *et al.* 1991). Habitat has since recovered on the Bill Williams River delta, but cuckoo numbers remain low (M. Halterman, pers. comm., 1999). In some Arizona areas, such as the San Pedro Riparian National Conservation Area along about 65 km (40 mi) of the upper San Pedro River, ongoing conservation efforts may improve habitat conditions for the species. The species is considered a Species of Concern by the Arizona Game and Fish Department, a designation that does not provide protection to the species (T. Corman, pers. comm., 1999).

## Colorado

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In Colorado west of the Continental Divide, the species was probably never common (Bailey and Niedrach 1965; Kingery 1998) and is now extremely rare (Kingery 1998). The yellow-billed cuckoo is an uncommon summer resident of Colorado. According to the Colorado Breeding Atlas (1998), the general status of the yellow-billed cuckoo in Colorado is nearly extirpated in the West with once common eastern populations becoming uncommon to rare. Only one confirmed nesting observation occurred along the Yampa River near Hayden during the Breeding Bird Atlas surveys conducted from 1987-1994. Other confirmed nesting records (mid-1980s) have been associated with outbreaks of caterpillar infestations in box elders in the Four Corners Region/Durango area. As a result of the infestation, insecticides were sprayed and since that time, Durango residents have been removing box elders to limit insect infestations. National Park Service surveys in southwest Colorado from 1988 through 1995 for the Colorado Bird Breeding Atlas have no records of yellow-billed cuckoo. Park staff also conducted extensive surveys of the Mancos River in the park six times during the past 12 years and adjacent to Yucca House National Monument throughout 2000 with no reports of yellow-billed

cuckoo (M. Colyer, *in litt.*, 2001). Few sightings of yellow-billed cuckoo have occurred in western Colorado along the Colorado River near Grand Junction (T. Ireland, pers. comm., 2001). In 1998, biologists surveyed 389 km (242 mi) of lowland river riparian habitat along six rivers in west-central Colorado for cuckoos. They found one cuckoo, representing a probable nesting pair (Dexter 1998).

## Montana

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There are very limited data for the area west of the Continental Divide in Montana. Three specimens of the yellow-billed cuckoo have been collected since the early 1960s, and there are few recorded sightings of the yellow-billed cuckoo since the early 1900s (Saunders 1921). Local records for the species around the Flathead River area are scarce. A few records indicate that yellow-billed cuckoos do occur in this area, but no confirmed breeding information exists (S. Lenard, pers. comm., 2001). Yellow-billed cuckoos may be seen locally in the southern portion of the state along the larger stream corridors that run from Montana into northeastern Wyoming (L. Nordstrom, pers. comm., 2001).

## Idaho

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In Idaho, the species was considered a rare and local summer resident (Burleigh 1972) with only three records for the State over the previous 100 years. In northern and central Idaho, there are only four records of yellow-billed cuckoo over the last century. The most recent record for this area comes from the S. Fork of the Snake River in 1992 (Stephens and Sturts 1997). In southwestern Idaho, the yellow-billed cuckoo has been considered a rare, sometimes erratic, visitor and breeder in the Snake River valley. Numerous sightings have been recorded in the southwestern part of the state during the past 25 years. The yellow-billed cuckoo appears to be hanging on precariously in Idaho and could easily become extirpated from the State in the near future. Therefore, available information is inadequate to judge population or distributional trends. The breeding population in Idaho is likely limited to a few breeding pairs at most.

## New Mexico

In New Mexico, the species was historically rare statewide, but common in riparian areas along Pecos and Rio Grande, as well as uncommon to common locally along portions of the Gila, San Francisco and San Juan rivers (Bailey 1928; Hubbard 1978). Current information is inadequate to judge trends, but the species was fairly common in the mid-1980s along the Rio Grande between Albuquerque and Elephant Butte Reservoir, and along the Pecos River in southeastern New Mexico. Numbers may have increased there in response to tamarisk (*Tamarix* spp.) colonization of riparian areas formerly devoid of riparian vegetation (Howe 1986). A review on the status of the species in New Mexico concluded that the species would likely decline in the future due to loss of riparian woodlands (Howe 1986). Habitat degradation and/or loss of cottonwood regeneration are likely occurring in some areas, including the Rio Grande (B. Howe, pers. comm., 2001).

## Texas

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The portion of Texas west of the Pecos River has been identified as within the range of the historic western subspecies (Oberholser and Kincaid 1974), but other authors consider birds

from this area most similar to eastern cuckoos (Hughes 1999). The species still occurs in this area but its conservation status is unknown (Groschupf 1987). Population reports of the yellow-billed cuckoo in the Trans-Pecos area of western Texas near Big Bend National Park support scattered populations of yellow-billed cuckoo (Wauer 1971). These populations tend to be associated with areas of springs and developed wells or earthen ponds supporting mesic vegetation such as cottonwood and willow. The bird checklist of Guadalupe Mountains National Park near Beaumont Texas on the New Mexico border lists the yellow-billed cuckoo as a rare summer and fall breeder. Yellow-billed cuckoo population trends from 1966 to 1998 for the entire state of Texas are showing a decline (U.S. Geological Survey-Biological Resources Division 1999). Yellow-billed cuckoo call studies from the University of Texas at El Paso, conducted from 1988 to 1998, found a significant decline in response calls over numerous sites in southern New Mexico and western Texas. Average response percentages went from 30 percent in 1988 to 5 percent in 1998. The study concluded that the yellow-billed cuckoo is a rare and highly vulnerable species in the Rio Grande Valley of Southern New Mexico and extreme west Texas (J. Sproul *in litt.*, 2000). The Texas Department of Parks and Wildlife (TDPW) currently does not separate the eastern and western populations of the yellow-billed cuckoo and identifies the species as globally abundant and State secure since the State ranking was last revised in 1994. However, subsequent publications by the TDPW indicate the species is becoming increasingly rare and declining due to urban development and reduction of habitat (Shackelford and Lockwood 2000). Peterson and Zimmer (1998) reported that the yellow-billed cuckoo might be declining due to habitat destruction in El Paso County. The species is widespread and uncommon to common in central and eastern Texas (Oberholser and Kincaid 1974; Rappole and Blacklock 1994).

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## Utah

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In Utah, the species was historically uncommon to rare along river bottoms. There are at least two recent breeding records (Ouray National Wildlife Refuge on the Green River, and the Matheson Wetland Preserve near Moab) and reports from at least five other areas where breeding has been suspected (E. Owens, pers. comm., 1998). Recent avian surveys of riparian habitats within the historic range (the Salt Lake Valley) recorded three cuckoos in 7,000 survey hours (E. Owens, pers. comm., 1998). Threats to yellow-billed cuckoos and their habitat along the Green River in Utah include habitat loss and fragmentation from flooding and dewatering, encroachment by non-native tamarisk, grazing, and oil and gas development (Hanberg 2000 *in* Howe and Hanberg 2000). Management of flow regimes was identified as a major impact on habitat with extremely high flows removing habitat and extended periods of low flows likely drying up yellow-billed cuckoo habitat which could result in the loss of suitable habitat and invasion by tamarisk. Cattle grazing was also identified as a possible threat to patches of yellow-billed cuckoo habitat by contributing to the loss of subcanopy vegetation and cottonwood regeneration by grazing and trampling. Another potential threat to yellow-billed cuckoo habitat was attributed to recreational impacts by river users (e.g., use of cottonwood stands for campsites and "lunch spots"). The Utah Division of Wildlife Resources (1998) stated that the yellow-billed cuckoo is threatened by habitat loss from agricultural, water, road and urban development, and has declined significantly across its range.

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## Nevada

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The historic status of the yellow-billed cuckoo in Nevada is poorly documented although there is evidence it was nesting along the lower Truckee and Carson Rivers and in southern Nevada along the Colorado and Virgin Rivers (Linsdale 1951; Neel 1999). Surveys using call-playback techniques were done in the early 1970s along the Truckee, Carson, and Walker rivers. In surveys of the six remaining habitats able to support yellow-billed cuckoos, as described by Gaines (1974), no birds were heard or seen (Oakleaf 1974). The most recent documentation of yellow-billed cuckoo nesting in Nevada was a pair at Beaver Dam Wash, Lincoln County in 1979. Since 1990, there have been only sporadic sightings of single birds throughout the State (Neel 1999). The Nevada Division of Wildlife (NDOW) (2001) conducted surveys in 2000 in southern Nevada and documented 19 yellow-billed cuckoos, comprising 4 pairs and 11 unpaired birds with no nests being found. An estimate by the NDOW put the summer population of yellow-billed cuckoo between 20-30 birds State-wide.

Suitable habitat for the yellow-billed cuckoo is very limited in Nevada with most areas of cottonwood riparian forests being fragmented (Nevada Division of Wildlife 2001). National Park Service studies from Great Basin National Park (National Park Service 2001) in the South Snake Mountain Range determined that of the 190 hectares (ha) [469 acres (ac)] of existing riparian habitat only 3.2 ha (8 ac) was suitable for supporting yellow-billed cuckoo. Most of the suitable habitat along the Truckee, Carson, and Walker rivers has been modified or destroyed (Nevada Division of Wildlife 1990, 1985).

## Mexico

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The yellow-billed cuckoo breeds locally in Mexico and is a widespread transient during migration (Howell and Webb 1995). The species has been recorded as a summer resident (presumably breeding) locally within several regions of Mexico, including the state of Baja California Sur; northwest Mexico from Sonora and Chihuahua south to Zacatecas; northeast Mexico on the Atlantic slope from Coahuila to Tamaulipas; and in the northern Yucatan Peninsula (Howell and Webb 1995). The species has been recorded as locally common in the State of Sonora (Russell and Monson 1998), but recent or quantitative information for that area is lacking (L. Hays, pers. comm., 1999), as are data on the status of cuckoo populations in Mexico.

## Range East of Continental Divide

In the United States east of the Rocky Mountains, the yellow-billed cuckoo is uncommon to common as a breeding bird. The species' habitat in this region, riparian and other broad-leaved woodlands (Ehrlich et al. 1988), occupies a significant area of the region (Service 1981). This is in sharp contrast to the west, where suitable habitat is limited to narrow and often widely-separated riparian zones that occupy a fraction of 1 percent of the western landscape (Service 1981; Knopf and Samson 1994). Trend data based on detections by the Breeding Bird Survey (BBS) program (BBS 1999) indicate significant population declines between 1966 and 1996 in 12 of 29 eastern and central States; the average annual decline during this period was 1.9 percent. Most of these declines have occurred since 1980. The average number of detections of cuckoos increased in these 29 States for the interval from 1966 to 1979; however, the average number of detections decreased in all 29 States between 1980 and 1996. In 15 of these States, the decline between 1980 and 1996 is statistically significant, and the average annual decline during this period was 2.8 percent. Trends vary widely between states, ranging from a decline

of 15.8 percent (Connecticut, 1966-1996) to an increase of 17 percent (Nebraska, 1966-1979). Bird survey data are insufficient to evaluate population trends in regions west of the Continental Divide, but for two Service regions that span both sides of the Divide. The BBS data indicate declines of 2.7 percent in Region 2 (Arizona, Oklahoma, Texas, and New Mexico; 1980-1996), and 4.7 percent in Region 6 (Kansas, Nebraska, the Dakotas, Montana, Colorado, Utah, and Wyoming; 1980-1996).

## Summary

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Since 1980, state-wide surveys from New Mexico, Arizona, and California, indicate an overall estimated 52 percent decline with numbers too low to establish trends from Idaho, Montana, Utah, Nevada and Colorado. Trend information is also lacking from west Texas and Mexico. However, we believe yellow-billed cuckoos exist in large enough numbers to be surveyed. The yellow-billed cuckoo has been extirpated as a breeding bird in Washington, Oregon and British Columbia.

### THREATS:

#### A. The present or threatened destruction, modification, or curtailment of its habitat or range.

Principal causes of riparian habitat losses are conversion to agricultural and other uses, dams and river flow management, stream channelization and stabilization, and livestock grazing.

Available breeding habitats for cuckoos have also been substantially reduced in area and quality by groundwater pumping, and the replacement of native riparian habitats by invasive non-native plants, particularly tamarisk (Groschupf 1987; Rosenberg *et al.* 1991). Estimates of riparian habitat losses include 90-95 percent for Arizona, 90 percent for New Mexico, 90-99 percent for California, and more than 70 percent nationwide (Ohmart 1994; Noss *et al.* 1995). Much of the remaining habitat is in poor condition and heavily affected by human use (Almand and Krohn 1978; U.S. Department of Interior 1994). Fragmentation effects include the loss of patches large enough to sustain local populations, leading to local extinctions, and the potential loss of migratory corridors, affecting the ability to recolonize habitat patches (Hunter 1996).

Dahl (1990) reviewed estimated losses of wetlands between 1780 and the 1980s in the Southwest: California is estimated to have lost 91 percent, Nevada 52 percent, Utah 30 percent, Arizona 36 percent, New Mexico 33 percent, and Texas 52 percent. As much as 90 percent of major lowland riparian habitat has been lost or modified in Arizona (State of Arizona *in litt.*, 1990). Franzreb (1987) noted that “[B]ottomland riparian forests are the most highly modified of natural landscapes in California.”

Much of the catastrophic decline of the cuckoo in California has been directly attributed to breeding habitat loss from clearing and removal of huge areas of riparian forest for agriculture, urban development and flood control (Gaines 1974; Gaines and Laymon 1984; Laymon and Halterman 1987b, Launer *et al.* 1990; Hughes 1999). Losses in the Central Valley alone have been huge, especially along the Valley’s formerly free-flowing rivers such as the Sacramento, where under pristine conditions, broad overflow plains and dense riparian forests extended for up to 8 km (5 mi) from both banks (Service 2000a). Following the most intense reclamation and development period, Katibah (1984) estimated that Central Valley riparian forests had been reduced by more than 95 percent from historical condition and that a large proportion of

remaining forests were in highly disturbed or degraded condition. A recent study of the San Joaquin River between Friant Dam and Merced River confluence found that between 1937 and 1993, the area of riparian forest and scrub decreased 28 percent, from 2,727 to 1,989 ha (6,787 to 4,914 ac) (Jones and Stokes Associates, Inc. 1998).

Suitable habitat for the yellow-billed cuckoo is very limited in Nevada with most areas of cottonwood riparian forests being fragmented (Nevada Division of Wildlife 2001). National Park Service studies from Great Basin National Park (National Park Service 2001) in the South Snake Mountain Range determined that of the 190 ha (469 ac) of existing riparian habitat only 3.3 ha (8 ac) was suitable for supporting yellow-billed cuckoo. Most of the suitable habitat along the Truckee, Carson, and Walker rivers has been modified or destroyed (Nevada Division of Wildlife 1990, 1985).

Loss and modification of southwestern riparian habitats have occurred from urban and agricultural development, water diversion and impoundment, channelization, livestock grazing, off-road vehicle and other recreational uses, and hydrological changes resulting from these and other land uses. Rosenberg *et al.* (1991) noted “it is the cottonwood-willow plant community that has declined most with modern river management.” Loss of the cottonwood-willow riparian forests has had widespread impact on the distribution and abundance of bird species associated with that forest type (Hunter *et al.* 1987; Hunter *et al.* 1988; Rosenberg *et al.* 1991).

Overuse by livestock has been a major factor in the degradation and modification of riparian habitats in the western United States. The effects include changes in plant community structure and species composition and in relative abundance of species and plant density. These changes are often linked to more widespread changes in watershed hydrology (Rea 1983; General Accounting Office (GAO) 1988). Livestock grazing in riparian habitats typically results in reduction of plant species diversity and density, especially of palatable broadleaf plants like willows and cottonwood saplings, and is one of the most common causes of riparian degradation (Carothers 1977; Rickard and Cushing 1982; Cannon and Knopf 1984; Klebenow and Oakleaf 1984; GAO 1988; Clary and Webster 1989; Schultz and Leininger 1990).

Increases in abundance of riparian bird species have followed reduction, modification, or removal of cattle (*Bos sp.*) grazing. Krueper (1993) found the following increases in birds associated with cottonwood-willow habitat on Arizona’s San Pedro River 4 years after the removal of livestock: yellow warbler - 606 percent; common yellow-throat (*Geothlypis trichas*) - 2,128 percent; yellow-breasted chat (*Icteria virens*) - 423 percent. Bock *et al.* (1993) found that 40 percent of the riparian bird species they examined were negatively affected by livestock grazing.

The Service believes that documentation of livestock impacts on willow flycatcher subspecies is relevant to yellow-billed cuckoo because linear riparian habitats in the arid range of the yellow-billed cuckoo are especially vulnerable to fragmentation and destruction by livestock. As shady, cool, wet areas providing abundant forage, they are disproportionately preferred by livestock over the surrounding xeric uplands (Ames 1977; Valentine *et al.* 1988; Johnson 1989). Harris *et al.* (1986) believed that termination of grazing along portions of the South Fork of the Kern River in California was responsible for increases in riparian vegetation.

Another likely factor in the loss and modification of the yellow-billed cuckoo is the invasion by the exotic tamarisk (*Tamarisk sp.*). Tamarisk was introduced into western North America from the Middle East in the late 1800s as an ornamental windbreak and for erosion control. It has spread rapidly along southwestern watercourses, typically at the expense of native riparian vegetation, especially cottonwood/willow communities. Although tamarisk is present in nearly every southwestern riparian community, its dominance varies. It has replaced some communities entirely, but occurs at a low frequency in others.

The spread and persistence of tamarisk has resulted in significant changes in riparian plant communities. In monotypic tamarisk stands, the most striking change is the loss of community structure. The multi-layered community of herbaceous understory, small shrubs, middle-layer willows, and overstory deciduous trees is often replaced by one monotonous layer. Plant species diversity has declined in many areas and relative species abundance has shifted in others. Other effects include changes in percent cover, total biomass, fire cycles, thermal regimes, and perhaps insect fauna (Kerpez and Smith 1987; Carothers and Brown 1991; Rosenberg et al. 1991; Busch and Smith 1993).

Disturbance regimes imposed by humans (e.g., grazing, water diversion, flood control, woodcutting, and vegetation clearing) have facilitated the spread of tamarisk (Behle and Higgins 1959; Kerpez and Smith 1987; Hunter et al. 1988; Rosenberg et al. 1991). Cattle find tamarisk unpalatable. However, they eat the shoots and seedlings of cottonwood and willow, acting as a selective agent to shift the relative abundance of these species (Kerpez and Smith 1987). Degradation and, in some cases loss of native riparian vegetation, lowered the water table and resulted in the loss of perennial flows in some streams. With its deep root system and adaptive reproductive strategy, tamarisk thrives or persists where surface flow has been reduced or lost. Further, tamarisk establishment often results in a self-perpetuating regime of periodic fires, which were uncommon in native riparian woodlands (Busch and Smith 1993).

Manipulation of perennial rivers and streams has resulted in habitats that tend to allow tamarisk to out-compete native vegetation. Construction of dams created impoundments that destroyed native riparian communities. Dams also eliminated or changed flood regimes, which were essential in maintaining native riparian ecosystems (Vogl 1980). Changing (usually eliminating) flood regimes provided a competitive edge to tamarisk. In contrast to native phreatophytes, tamarisk does not need floods and is intolerant of submersion when young. Diversion of water caused the lowering of near-surface groundwater and reduced the relative success of native species in becoming established. Irrigation water containing high levels of dissolved salts also favors tamarisk, which is more tolerant of high salt levels than most native species (Kerpez and Smith 1987; Busch and Smith 1993).

Conversion to tamarisk typically coincides with reduction or complete loss of bird species strongly associated with cottonwood-willow habitat including the yellow-billed cuckoo (Hunter et al. 1987; Hunter et al. 1988; Rosenberg et al. 1991). While Brown and Trosset (1989) believed tamarisk may serve as an "ecological equivalent" to native vegetation, they noted that their study occurred where a tamarisk community became established where no native equivalent existed before. This is especially evident along the Pecos River in Texas (Hunter et al. 1988).

Water developments also likely reduced and modified yellow-billed cuckoo habitat. The series of dams along most major southwestern rivers (Colorado, Gila, Salt, Verde, Rio Grande, Kern, San Diego, and Mojave) have altered riparian habitats downstream of dams through hydrological changes, vegetational changes, and inundated habitats upstream. New habitat is sometimes created along the shoreline of reservoirs, but this habitat (often tamarisk) is often unstable because of fluctuating levels of regulated reservoirs (Grinnell 1914; Phillips et al. 1964; Rosenberg et al. 1991). Diversion and channelization of natural watercourses are also likely to have reduced yellow-billed cuckoo habitat. Diversion results in diminished surface flows and increased salinity of residual flows. Consequent reductions and composition changes in riparian vegetation are likely. Channelization often alters stream banks and fluvial dynamics necessary to maintain native riparian vegetation (Vogl 1980).

River channelization, construction of levees close to the river, and rock riprap armoring along the levees have caused the Sacramento River to exhibit habitat fragmentation and disconnection from ecological processes which both renew and restore riparian and aquatic habitats (Laymon and Halterman 1987a; Halterman 1991; Service 2000). More than one-half of the Sacramento River's banks within the lowermost 312 km (194 mi) of river have now been rip-rapped by four decades of bank protection under U.S. Army Corps of Engineers' auspices (Service 2000b). The result is that much of the river's remaining riparian habitat now occurs in narrow disconnected linear strips (Service 2000b; Halterman et al. 2001), which are not utilized by the cuckoo for nesting (Gaines 1974). This may be due to the loss of continuous migration corridors, lack of patches of adequate size for nesting, and the species inability to use highly isolated patches (Halterman 1991). Exacerbating such problems is the fact that the cuckoo now, for unknown reasons, utilizes a narrower range of habitat in California, now predominantly cottonwood-willow complex, than it did historically (Laymon and Halterman 1987b).

The yellow-billed cuckoo is considered very vulnerable to tropical deforestation on its wintering grounds (Morton 1992), and while losses of neotropical forests and woodlands have been substantial and ongoing, particularly in Central America and northern South America (Hartshorn 1992; Brown and Lomolino 1998), the relationship between over-wintering habitat and yellow-billed cuckoo populations has not been studied.

B. Overutilization for commercial, recreational, scientific, or educational purposes.

The Service is unaware of threats resulting from overutilization.

C. Disease or predation.

The Service is unaware of any disease or predation that constitutes a significant threat to yellow-billed cuckoos. However, adults have been preyed upon by falcons (Hector 1985; B. Altman, pers. comm., 2000), and nestlings have been taken by hawks, jays, grackles (*Quiscalus quiscula*) (Nolan and Thompson 1975; Launer et al. 1990) and by various snake and mammal species (Nolan 1963). In eastern Mexico, adults are frequently attacked by raptors during migration (J. K. Wilson, pers. comm. in Hughes 1999; Wilson 1999). From a study done by Wilson on 252 nests of yellow-billed cuckoos in Arkansas, predation accounted for 91 percent of all nest failures, with small mammals, birds, and reptiles depredating the greatest proportion (Wilson 1999).

D. The inadequacy of existing regulatory mechanisms.

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. Sec. 703-712) is the only current Federal protection provided for the yellow-billed cuckoo. The MBTA prohibits “take” of any migratory bird, which is defined as: “to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.” However, there are no provisions in the MBTA preventing habitat destruction unless direct mortality or destruction of active nests occurs.

The majority of the occupied areas west of the Continental Divide for the yellow-billed cuckoo lie within California, Arizona, and New Mexico (Hughes 1999). Only California classifies the yellow-billed cuckoo as endangered [California Department of Fish and Game (CDFG) 2001]. In Arizona, it was listed as threatened by the Arizona Department of Game and Fish; however, it is now listed as a species of concern (Arizona Game and Fish Department 2000). The bird has no special protective status in Wyoming, New Mexico, Colorado, Idaho or Texas (Groschupf 1987), and habitat protection or protection of individuals is not provided beyond existing regulations on capture, handling, transportation, and take of native wildlife. Utah considers the cuckoo as threatened. In Nevada, the cuckoo is identified as critically imperiled due to extreme rarity, imminent threats or biological factors and is proposed for protection as threatened. The California Endangered Species Act (CESA) prohibits unpermitted possession, purchase, sale, or take of listed species. However, the CESA definition of take does not include harm, which under the Act can include destruction of habitat that actually kills or injures wildlife by significantly impairing essential behavioral patterns (50 CFR 17.3). CESA does require consultation between the CDFG and other State agencies to ensure that activities of State agencies will not jeopardize the continued existence of State-listed species. Yellow-billed cuckoos have no State status in Oregon because it has not been considered an active breeding species since the 1940s (B. Alterman, pers. comm., 2001). In Washington, the yellow-billed cuckoo is considered critically imperiled (5 or fewer occurrences); however no active nesting has been documented since the 1930s. The Service believes that these and other regulatory mechanisms are inadequate to ensure the continued existence of the yellow-billed cuckoo.

E. Other natural or manmade factors affecting its continued existence.

Environmental, demographic, and genetic vulnerability to random extinction are recognized as interacting factors that might contribute to a population’s extinction (Hunter 1996).

Environmental random extinction refers to random events, climate, nutrients, water, cover, pollutants, and relationships with other species such as prey, predators, competitors, or pathogens, which may affect habitat quality.

The riparian habitat of the yellow-billed cuckoo has always been rare throughout the western continental U.S. and has become more so. Its habitat rarity and small, isolated populations make the remaining cuckoo populations in this region increasingly susceptible to local extirpation through stochastic events such as floods, fire, brood parasitism, predation, depredation, and land development.

The disjunct nature of habitats and small breeding populations impede the flow of genetic material and reduce the chance of demographic rescue from migration for adjacent populations. The resulting constraints on the gene pool intensify the external threats to the species.

Brood parasitism by the brown-headed cowbird (*Molothrus ater*) has been documented only six times (Friedmann 1971; Wilson 1999), and less so by the bronzed cowbird (*Molothrus aeneus*) (Clotfelter and Brush 1995). With the incubation period of 10-13 days and fledgling 10-11 days, the brown-headed cowbird requires more development time before fledging than the yellow-billed cuckoo. Therefore, successful parasitism of yellow-billed cuckoo nest by brown-headed cowbird is unlikely (Ehrlich et al. 1988).

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In addition to destruction and degradation of riparian habitats, pesticides may affect cuckoo populations (Groschupf 1987; Hughes 1999), although the evidence is too limited to evaluate this effect. It warrants further study. In areas where riparian habitat borders agricultural lands, e.g., in California's central valley, pesticide use may indirectly affect cuckoos by reducing prey numbers, or by poisoning nestlings if sprayed directly in areas where the birds are nesting (Laymon and Halterman 1987b). Accumulation of chlorinated hydrocarbon pesticides, particularly dichlorodiphenyltrichloroethylene (DDT), has affected other bird species, particularly top predators (Robinson and Bolen 1989).

Although DDT use has been banned in the United States since 1972, cuckoos may be exposed to DDT on wintering grounds where DDT use has not been banned. Analysis of two eggs collected in California in 1979 showed very low levels of dichlorodiphenyldichloroethylene (DDE), a stable metabolite of DDT, but eggshell fragments collected in 1985 from three nests along the South Fork of the Kern River in California averaged 19 percent thinner than pre-DDT era eggshells (Laymon and Halterman 1987b). DDT has caused eggshell thinning in other bird species, but its role in the Kern River observations is unknown.

**FOR RESUBMITTED PETITIONS:**

- a. Is listing still warranted? Yes
- b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? Yes
- c. Is a proposal to list the species as threatened or endangered in preparation? No
- d. If the answer to c. above is no, provide an explanation of why the action is still precluded: Since publication of the 2002 CNOR, the publication of a proposed rule to list this species has been precluded by other higher priority listing actions, and based on work scheduled we expect that will remain the case for the remainder of Fiscal Year 2004. Almost the entire national listing budget has been consumed by work on various listing actions taken to comply with court orders and court-approved settlement agreements, emergency listing, and essential litigation-related, administrative, and program management functions. We will continue to monitor the status of the yellow-billed cuckoo, western United States DPS, as new information becomes available. This review will determine if a change in status is warranted, including the need to make prompt use of emergency listing procedures

**LAND OWNERSHIP:**

Unknown

PRELISTING: None

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LISTING PRIORITY (\* after number)

THREAT
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Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6*
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

**Rationale for listing priority number:**

*Magnitude:* The magnitude of threats to the yellow-billed cuckoo was determined to be high. Much of the decline of the cuckoo is due to huge habitat loss from clearing and removal of huge areas of riparian forest for agriculture, urban development and flood control, and the invasion by the exotic tamarisk. The majority of the habitat for the cuckoo is on private lands and continues to be lost or significantly altered.

*Imminence:* The threats to the yellow-billed cuckoo were determined to be non-imminent because threats are ongoing, but no major imminent change is expected.

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes to the candidate list, including listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all additions of species to the candidate list, removal of candidates, and listing priority changes.

Approve: Steve Thompson  
Acting Regional Director, Fish and Wildlife Service

March 6, 2003  
Date

Concur: Steve Williams  
Director, Fish and Wildlife Service

April 5, 2004  
Date

Do not concur: \_\_\_\_\_  
Director, Fish and Wildlife Service

\_\_\_\_\_  
Date

Director's Remarks:

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Date of annual review: February 2003

Conducted by: \_\_\_\_\_

Comments:

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