

YBCU Habitat Use in Southern Idaho 2018 Annual Report



Twin Bridges Survey Site along the South Fork of the Snake River – Photo by Tempe Regan

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ABSTRACT

We conducted breeding season surveys for YBCUs in riparian areas with moderately to highly suitable habitat across southern Idaho (Idaho Department of Fish and Game Regions 4, 5, and 6) from June 15 – August 8, 2018. Our objective was to survey the best potential cuckoo habitat within the study area. Our efforts in Region 4 were augmented with surveys funded by the Bureau of Land Management within the Shoshone Field Office. We surveyed sites with a mix of historic cuckoo survey efforts and detections, as well as new areas along the Big and Little Wood Rivers, the South Fork of the Boise River, the main stem of the Snake River, the Henry’s Fork, and the South Fork of the Snake River. Using a standardized protocol, we conducted four repeat surveys of 22, 21, and 30 distinct survey sites in Regions 4, 5, and 6, respectively. We detected YBCUs 31 different times, some of which almost certainly included repeat detections of individuals, and estimate that these detections represent approximately 11 to 13 individual birds. Our survey results, combined with detections from historic surveys, suggest that the YBCU occurs regularly but sporadically across a broad spatial scale in Idaho, and some areas of habitat likely support breeding cuckoos. In 2018, we suspect at least one and potentially two pairs of breeding birds, including at least one pair each at a site in Region 5 and a site in Region 6. Continuing standardized surveys for cuckoos throughout Idaho, to establish baseline data for cuckoo occurrence, will provide data that can be used to develop models of cuckoo habitat at a statewide level, and this is one of the ultimate objectives for the data we collected in 2018. To aid conservation and management efforts, we suggest future research on YBCUs in Idaho include the study of insect populations and how these may drive cuckoo occurrence, examining loss of large cottonwood galleries across the breadth of cuckoo habitat in Idaho, and targeting key areas for cuckoo habitat restoration.

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We would also like to thank staff at IDFG, especially Colleen Moulton whose efforts and initiative in gathering funding and coordinating this effort were integral. We also sincerely thank IDFG Regional Diversity Biologists Matt Proett, Becky Abel, and Ross Winton. Their help during planning, delineation of survey sites, and providing gear and kayaks was invaluable and, again, this effort would have floundered without their guidance and assistance. Thank you to Sonya Knetter whose GIS expertise and familiarity with IDFG's Wildlife Diversity Program database made delineating survey sites much more efficient.

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We would like to say a huge thank you to the countless private landowners who graciously gave us permission and coordinated with us on our visits to their property not once, but four times throughout the summer. The survey season would have lacked over a third of all the cuckoo detections without this private land access and you are all invaluable to the success of conservation in Idaho.

Finally, this project was funded by USFWS Section 6 funding awarded to IDFG, without which the large, coordinated survey effort and scope would not have been possible.

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GENERAL INTRODUCTION

The western population of Yellow-billed Cuckoo (*Coccyzus americanus*, YBCU) is considered distinct from cuckoos inhabiting the eastern and central United States. Due primarily to extensive loss of multi-layered riparian habitats throughout the arid West, this distinct population segment is currently listed as Threatened under the Endangered Species Act. The final listing rule was published on October 3, 2014 and the listing went into effect November 3, 2014 (Halterman et al. 2015). YBCUs are also designated a Tier 1 Species of Greatest Conservation Need in Idaho (IDFG 2017).

YBCUs breed within mature cottonwood forests with an understory of willow or other deciduous shrubs. Larger habitat patches, 80 hectares or more in extent within arid or semiarid landscapes, are almost always required for breeding, but cuckoos will nest in areas as small as 20 hectares (Hughes 1999, McNeil et al. 2013). Narrow, linear riparian strips less than 20 m wide are thought to not be used for nesting. However, these areas can provide foraging habitat and single adults have been observed in small patches during migration or foraging in these patches during the breeding season, as long as they are not spatially distant from more extensive habitat patches (Laymon and Halterman 1989, Halterman et al. 2015).

YBCU are secretive, dispersed widely across the landscape in large home ranges, prefer dense vegetative habitat, and Idaho is the northern extent of their range in the west (Reynolds and Hinckley 2005, Halterman 2009, Halterman et al. 2015). Unlike songbirds, they call infrequently and when not solicited, with rates as low as one call/hour (Reynolds and Hinckley 2005, Halterman 2009). Furthermore, local populations can exhibit large fluctuations in relatively short time periods; for example, a population on the South Fork Kern River in California grew from five to over 20 pairs in a 12-year period (Laymon et al. 1997) and a population on the San Pedro River in California halved in size from 2003 – 2006 and then doubled in just one year, from 2006 – 2007 (Halterman 2008). In Idaho, cuckoo populations may fluctuate based on the availability of large insects in the southern extent of their range; i.e. if

habitat and food are prolific in the south, there are fewer cuckoos in Idaho and vice versa (Matt Johnson pers. comm.) Taken together, this makes cuckoos extremely difficult to detect in the wild, and particularly in Idaho.

Although its distribution and population size in Idaho is somewhat uncertain, the most extensive cuckoo habitat in the state occurs in the Upper Snake River Basin of eastern Idaho and over half of historic cuckoo records in Idaho come from this region (Reynolds and Hinckley 2005). Historic sightings in central Idaho are less common, but include an observation of a cuckoo in 1997 at the Hayspur Fish Hatchery and a mixture of visual and aural observations in 2001, 2003, 2004, 2009, and 2015 along the Big Wood River near Stanton's Crossing (Reynolds and Hinckley 2005, eBird 2012). In 2009, a cuckoo was observed during an avian survey along the Big Wood River east of the Richfield Diversion Dam and south of the Magic Reservoir (Carlisle and Ware 2010). In 2017, a cuckoo was heard (eBird 2017) on the Little Wood River south of the Little Wood River Reservoir, but never detected during a formal survey.

OBJECTIVES

The Intermountain Bird Observatory (IBO) and Idaho Department of Fish and Game (IDFG) conducted standardized surveys for YBCUs within IDFG Regions 4, 5, and 6 across as much potentially suitable riparian habitat as could be surveyed using standardized methods in the summer of 2018. The goals of these surveys were to gain an understanding of where YBCUs occur, how many individuals may be using these areas annually, and to obtain data on presence/absence of cuckoos to inform more comprehensive modeling of cuckoo habitat across the state of Idaho. Objectives of this project include:

1. Conduct standardized surveys for YBCUs in potentially suitable habitat in IDFG Regions 4, 5, and 6.
2. Obtain GPS coordinates for all survey locations, noting both presence and lack of detections of cuckoos.
3. Collect standardized vegetation data and photos at each survey site.
4. Collect data on cuckoo occurrence in the Shoshone Field Office from annually repeated surveys at the same sites surveyed in 2017.

GENERAL METHODS

We followed recommendations of the Western YBCU Working Group for site selection and survey protocol (Halterman et al. 2015). We selected survey sites using a cuckoo habitat model for southern Idaho (Johnson et al. 2017) as well as consultation with IDFG biologists. Briefly, there are three survey periods used to determine presence of a cuckoo at a site and two visits are required during Survey Period 2. Survey Period 1 occurs from June 15 – June 30, Survey Period 2 from July 1 – July 31, and Survey Period 3 from August 1 – August 15. A total of four surveys, on separate visits, are conducted during those three periods. This allows, with fairly good confidence, researchers to ascertain presence of breeding cuckoos. For example, if a cuckoo is only detected during the first survey period, but not again later in the season, the bird is likely a migrant. We adhered as closely as possible to the suggested visit schedule of one visit every 12 to 15 days; \pm three days for the beginning and end of each survey period. However, due to limited surveyor availability and weather, there were a few cases in which two visits were separated by slightly more or slightly less than the 12-15 day window; but, in each of these cases, we still conducted each visit within the recommended date range. Additionally, we were unable to conduct a fourth visit at three survey sites in Region 4 due to the Sharps fire.

We began surveying at or just before sunrise and continued until we had completed entire or multiple survey sites, finishing all surveys by 1100. Generally, our survey sites were linear, following a riparian corridor, and we conducted surveys from the perimeter of each site due to patch size or access issues as well as extremely dense vegetation and flooding in some areas. Additionally, surveying from the outside edge of a patch can potentially aid chances of visual detections because surveyors are not surrounded by dense vegetation. However, depending on the survey site, we also conducted surveys from the interior of survey patches. We conducted broadcast-call surveys at points located ~100 m apart; however, sometimes this distance varied due to flooding and dense vegetation. Each broadcast sequence was a total of six minutes and consisted of one minute of silent listening followed by broadcast of five contact call sequences each spaced one minute apart. If a cuckoo was detected, we immediately stopped playing the broadcast calls and recorded a compass bearing, the estimated distance to the cuckoo, which broadcast period the cuckoo was detected in (1 – 5), time of detection, type of call, and behavior during the observation. Subsequent to each detection, the next broadcast point was relocated 300

m from the point where the previous detection occurred to minimize likelihood of detecting the same cuckoo within a single survey area.

We developed and implemented a more detailed vegetation collection protocol than what is suggested in Halterman et al. (2015). Because, in general, vegetation does not change very much within 100 m at our survey sites, we did not collect vegetation at every point. Instead, to allow for an approximation of overstory and understory vegetation across the entire survey area, we collected vegetation at every third point in smaller patches and every fifth point in larger patches. We collected data on percent and height (m) of both overstory and understory, as well as number of snags within 50 m of our survey point (Hanni et al. 2018), and if surface water was present within 300 m of our survey point. We estimated the overstory height in 1 m increments and understory in 0.25 m increments. We defined overstory as any woody vegetation ≥ 3 m tall and understory as < 3 m tall (Hanni et al. 2018). We identified up to five (depending on how many species were present) of the top overstory and understory species based on their percent cover. We estimated percent cover visually using the idea that cover equals the amount of shadow cast on the ground when the sun is directly overhead (Hanni et al. 2018). We took photos at points where we collected vegetation data. We began and ended each transect by recording the time, ambient air temperature, present cloud cover or precipitation, and wind speed (Beaufort scale). Additionally, we kept track of all other avian species detected by sight or aurally, and submitted eBird checklists (<http://ebird.org/content/ebird/>) specific to each survey site at the end of each morning's survey window. This data was not collected during the formal broadcast surveys but rather when surveyors were moving between points and throughout the survey when it made sense to record the data. This data provides additional information on bird communities in riparian habitats that cuckoos may use.

We selected survey sites using a preliminary habitat model for southern Idaho (Johnson et al. 2017) as well as consultation with Bureau of Land Management (BLM) and IDFG biologists. Johnson et al.'s (2017) preliminary habitat model designated YBCU habitat with probability breakdowns of the likelihood of cuckoo occupancy in 10% increments. Most survey sites we selected were in the range of 40 – 90% likelihood. The majority of survey sites occurred on BLM or other publicly accessible land; however, we did have a subset of sites that required private landowner permission for access and surveys. A subset of surveys in Region 6 required jet boats to access the survey sites. In Region 5, we accessed almost all our survey sites via

kayak. Additionally, three sites in the upper Little Wood River within Region 4 did not receive the fourth visit due to hazards created by the Sharps fire. However, we were able to survey all other sites with the complete four visits across the late June (June 15-30), early July (July 1-15), late July (July 15-31), and early August (August 1-15) survey periods. Because a USFWS permit is required to conduct call-playback surveys for a species listed under the Endangered Species Act, only biologists that had attended a cuckoo-specific training were authorized to conduct surveys (Permit Number: TE22702C-0).

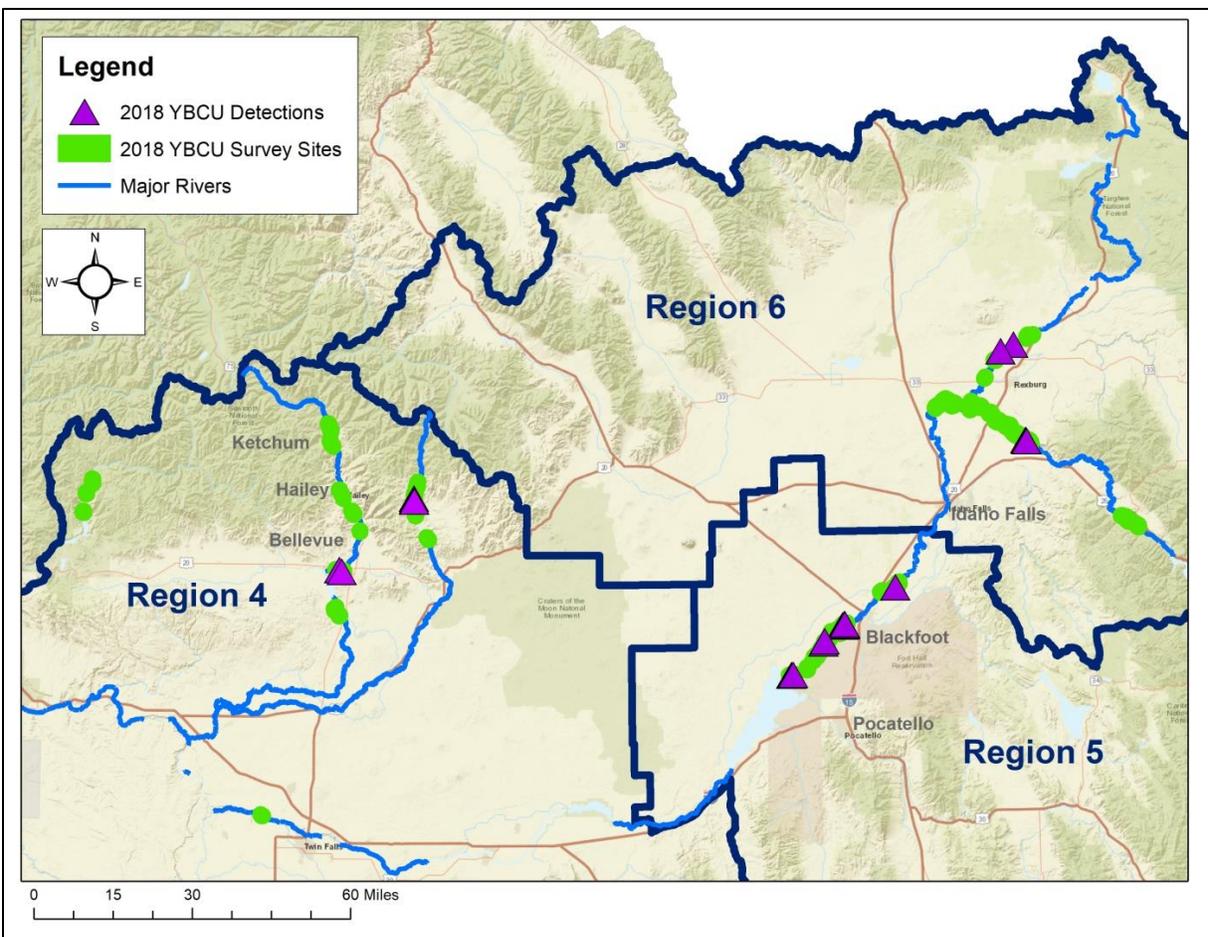


Picture 1. IBO Research Biologist conducts a YBCU survey along the south side of the USFWS Proposed Critical Habitat along the Big Wood River - photo by Aylett Lipford

GENERAL RESULTS

We surveyed sites with a combination of historic cuckoo survey efforts and detections as well as new areas along the Big and Little Wood Rivers, the South Fork of the Boise River, the main stem of the Snake River, the Henry's Fork, and the South Fork of the Snake River. Using a standardized protocol, we conducted four repeat surveys of 22, 21, and 30 distinct survey sites in Regions 4, 5, and 6, respectively. We detected YBCUs 31 different times. We had five, 20, and six detections in Regions 4, 5, and 6, respectively (Figure A). Some of these detections almost certainly included repeat detections of individuals, and we estimate that these detections represent approximately 11 to 13 individual birds.

Figure A. All YBCU survey site locations (green) and YBCU detections (purple) within IDFG Regions 4, 5, and 6 for the 2018 survey season.



GENERAL CONCLUSIONS and RECOMMENDATIONS

Although our surveys in 2018 were spatially comprehensive, the information they provide is still limited in temporal scope. Information on YBCU occurrence is only useful for answering the most basic questions. Thus, we recommend continuing standardized surveys for cuckoos throughout potentially suitable habitat in southern Idaho, to establish baseline data for cuckoo occurrence and ideally in coordination with other survey efforts throughout the range of the western distinct population segment

In late July 2018, participants from BLM, IDFG, and U.S. Fish and Wildlife Service (USFWS), and IBO discussed the possibility of creating a multi-organizational working group for YBCU monitoring across the state of Idaho and we began outlining priorities for the next few years. These draft priorities include continuing to gather baseline survey data in southern Idaho, as mentioned above, as well as research on prey populations that might support cuckoos, potential monitoring of nest success, and prioritizing areas for habitat restoration. For example, research examining insect population cycles could provide information on how these may drive YBCU occurrence across different years in southern Idaho, something other studies suggest may occur within the cuckoo's range (Laymon 1980, Koenig and Liebhold 2005, Halterman 2009, McNeil et al. 2013). If we find evidence for multiple breeding individuals, future research could include nest-searching and monitoring as well as potential deployment of satellite transmitters to better assess movement patterns, habitat selection, and demography. However, this would require new permits from the USFWS and close collaboration with other cuckoo research and monitoring teams. Finally, several areas may present ideal opportunities for cuckoo habitat restoration based on important factors such as presence of surrounding native vegetation, consistent annual water supply, and already existing, if limited, patches of habitat. One such area, with potential for restoration, is located just south of the Richfield Diversion Dam in Region 4. Cuckoos have been detected here in 2009 and 2017, sparse stringers of cottonwoods already exist, the water supply is stable, and there is extensive BLM land adjacent to this site. Taken together, these factors suggest this area could be an ideal target for future cuckoo habitat restoration and expansion.

OVERVIEW OF 2018 EFFORTS ACROSS SOUTHERN IDAHO

Each chapter in this report pertains to a different region designated and administered by the Idaho Department of Fish and Game. Region 4 is unique among other regions because it contains data and survey efforts we completed using BLM funding for BLM cuckoo surveys within the Shoshone BLM Field Office in combination with additional surveys we conducted that were funded by IDFG. Following Region 4, we present and discuss results of surveys in Regions 5 and 6, respectively. We report any pertinent introduction, methods, and results and discussion specific to each region under each region's chapter, however the general methods and the general introduction above apply to each region and should be referred to as needed.

REGION 4

ABSTRACT

We conducted breeding season surveys for YBCUs in riparian areas with moderately to highly suitable habitat across Region 4 in Idaho from June 15 – August 8, 2018, with much of the effort concentrated in the BLM Shoshone Field Office. Our main objective was to survey the best potential cuckoo habitat within this region. We conducted four repeat surveys in 21 distinct survey sites along the Big and Little Wood Rivers and at one site north of Anderson Ranch Reservoir on the South Fork of the Boise River, for a total of 22 distinct survey sites. Initially, we surveyed two other sites north of Anderson Ranch Reservoir but dropped these after two visits due to unsuitable habitat. Overall, only three sites were new in 2018 with the rest being repeated from 2017, with some slight modifications based on access and expanding surveys into nearby suitable habitat. We detected single YBCUs at each of three different survey sites, two within the Proposed Critical Habitat along the Big Wood River and one on a private land survey in the Little Wood River valley. In addition to patchy surveys conducted in 2009 and 2010, this is the second complete, standardized survey of suitable habitat within the BLM Shoshone Field Office. Survey results suggest that the YBCU does occur in this area and some large areas of habitat could support breeding cuckoos. However, our survey results do not provide any evidence of breeding cuckoos in 2018 in Region 4. Habitat in Region 4 could still be important for cuckoo life history including breeding and stopover habitat during migration and we suggest that restoration of habitat could maintain and improve important habitat for cuckoos in this region as part of the greater mosaic of cuckoo habitat across Idaho.

INTRODUCTION

Region 4 contains a small section (~4.3%) of the total USFWS Proposed Critical Habitat (FR 2014) in Idaho, as well as other potentially suitable areas of riparian habitat for YBCUs. This section of Proposed Critical Habitat, located along the Big Wood River, is separated by roughly 135 – 182 km from the other sections in eastern and southeastern Idaho along the Henry's, South Fork, and main stem of the Snake River (Figure 1.1). It, and the majority of surveys sites in Region 4, is unique from other sections of Idaho's Proposed Critical Habitat in that the riparian zone and cuckoo habitat is surrounded by a continuation of natural habitat (native sagebrush, forbs, and grasses) instead of agricultural lands that are closely associated with the Snake River survey sites in eastern and southeastern Idaho. The riparian vegetation is comprised primarily of black cottonwood (*Populus balsamifera ssp. trichocarpa*) overstory, with mixed willow (*Salix spp.*), red osier dogwood (*Cornus sericea*), gooseberry (*Ribes spp.*), Quaking aspen (*Populus tremuloides*), and snowberry (*Symphoricarpos spp.*) in the understory.

Historic sightings of cuckoos in Region 4 include an observation of a cuckoo in 1997 at the Hayspur Fish Hatchery and a mixture of visual and aural observations in 2001, 2003, 2004, 2009, and 2015 along the Big Wood River near Stanton's Crossing (Reynolds and Hinckley 2005, eBird 2012). In 2009, a cuckoo was observed during an avian survey along the Big Wood River east of the Richfield Diversion Dam and south of the Magic Reservoir (Carlisle and Ware 2010). During our formal surveys in 2017, we also detected an individual cuckoo three times in one survey visit at a site near the Richfield Diversion dam, within a few hundred meters of the 2009 observation. Additionally, in 2017 a cuckoo was heard (eBird 2017) on the Little Wood River, south of the Little Wood River Reservoir but never detected during a formal survey.

Although IBO conducted three rounds of surveys in many potentially suitable areas in 2010, these were not derived from a habitat model. In 2017, we initiated the first large-scale monitoring effort across the extent of suitable habitat within the BLM Shoshone Field Office (FO) and continued those efforts in 2018. Thus, our 2018 effort represents the second year of standardized surveys for YBCUs on BLM lands within the Shoshone FO, with an expanded effort onto other land ownership. The majority of 2018 YBCU surveys in Region 4 were part of a BLM Shoshone FO project, but we added five additional survey sites as part of the Section 6 project. Additionally we expanded surveys to cover more areas of suitable cuckoo habitat. We include all data and figures, from both BLM-specific and IDFG surveys, within this report.

METHODS

We conducted target playback surveys for YBCUs, using standardized methods (see General Methods section above), at a total of 22 separate survey sites in riparian habitat along the Snake, Big Wood, and Little Wood rivers (Figure 1.2). The majority (20) of our survey sites in Region 4 occurred outside of the Proposed Critical Habitat.

Our 2017 effort was funded by the BLM and our surveys focused within the Shoshone FO, which occurs almost entirely within Region 4 (Figure 1.1). In 2018, we re-surveyed all sites with suitable habitat from 2017 plus an additional five sites away from BLM land. However, of these five, two were dropped due to unsuitable habitat after two rounds of survey (Figure 1.2), leaving three additional sites receiving the full survey effort. Two of these three sites were on private land and one was on national forest land. Additionally, three sites in the upper Little Wood River did not receive the fourth visit due to hazards created by the Sharps fire (Figure 1.3). Thus, we surveyed all 22 sites in mid-June (June 15-30), early July (July 1-15), and late July (July 15-31), but in early August (August 1-15) we only surveyed 19 sites.



Picture 2. A morning sunrise over the Proposed Critical Habitat as we surveyed from the south side of the Big Wood River - photo by Tempe Regan

RESULTS and DISCUSSION

We surveyed a total of 233 survey points across all 22 sites for a total of 806 individual surveys. We detected YBCUs at five of the survey points (2%), 0.64% of the 786 individual surveys and these represented three sites overall (15%), including two of 17 sites that we surveyed the full four visits and at one of the three sites that only received three visits (Figure 1.4).

On 19 June 2018, while conducting the first visit at the Proposed Critical Habitat South site at the sixth point of the morning, we detected a YBCU in the fifth survey minute (Figure 1.5). At 0715, two observers heard the bird giving the typical “kowlp” contact call after the fifth sequence of broadcasts ended. The bird never called again and we never visually observed it. We did not detect a cuckoo at this site the rest of the season. However, during the second visit at the Proposed Critical Habitat North/Stanton Crossing site, which is just across the river, we detected a cuckoo at point 13 of the survey route at 0745 after the second set of broadcast calls finished (Figure 1.5). Again, we did not visually observe this bird. These two detections were separated by a straight line distance of ~950 m and the two routes are parallel and both are within the USFWS Proposed Critical Habitat (Figure 1.5). Thus, overall there were cuckoos detected on visits one and two (Survey Period one and two also) in the Proposed Critical Habitat and, while it would be very difficult to know for sure, these detections could have been of the same individual. Additionally, there are historical records from the Stanton’s Crossing/Mahoney Flat area within the Proposed Critical Habitat (Reynolds and Hinckley 2005) and the riparian habitat in this area appears suitable for breeding cuckoos as it supports a cottonwood overstory with a dense understory of willow, dogwood, and other shrubs. After each detection, according to protocol, we moved 300 m to our next survey point, and neither bird was observed again during the same morning’s survey. Additionally, we detected a cuckoo at three different survey points in the Upper Little Wood River 2 (on private land) site on 18 July 2018 during the third visit to this site (Figure 1.6). We detected a suspected lone individual at 0817, 0903, and 0915. We observed this bird both visually and aurally during the first detection and all other observations were aural only. We observed this cuckoo making a very strange, distinctive soft three-part coo, with each sub-part increasing in volume. We were able to obtain audio/video of this interesting behavior. Although we detected a bird three times, the aural observation was always the same, distinctive call, thus we suspected it was the same individual. In order to verify this suspicion, we hiked

rapidly from the location of the last detection (the last point of the survey), to the location of the first detection (~1000 m upstream) and played the call sequence one more time. We did not detect a bird during that time, which supports the idea of there being one bird following the surveyor throughout the route, rather than multiple birds. Unfortunately, we were unable to conduct a fourth visit due to hazards created by the Sharps fire, which burned in and around the entirety of this survey route (Figure 1.3).

We cannot determine with certainty the actual number of cuckoos detected throughout the season. However, there was at least one, but potentially two, birds in the Proposed Critical Habitat. We think there was just one individual at the Upper Little Wood River 2 site. We did not have any cuckoo detections during the 2018 survey season at the Magic Reservoir South 1 site, where we detected a single cuckoo in both 2017 (Regan and Carlisle 2017) and in 2009 (Carlisle and Ware 2010, Figure 1.4).

Based on timing, it seems possible that our 2018 observations in the Proposed Critical Habitat included a newly arrived migrant that decided to settle in that area for the duration of the summer. Although we never detected cuckoos during the third and fourth visits, from either side of the river, several factors interfere with detection at this site and could impede our ability to detect cuckoos. First, the Proposed Critical Habitat is a large swath of quality cuckoo habitat, both in width and length, and from most points we are surveying from outside the habitat and broadcasting inward. This survey method is driven by the fact that there is usually flooding and high water during visits one, two, and potentially visit three in some years that impede or make access dangerous. Thus, although we feel we are choosing the best way to thoroughly survey this area, even if its imperfect, future efforts to explore alternative routes could continue. During the fourth visit from the north side of the river, we did survey down the river corridor itself in an attempt to scout new routes. Although this route was feasible to survey during the latter part of the summer, it would not be possible earlier in the season because the river flow and volume make it unsafe and difficult to hear and stop at survey points. Second, Idaho State Highway 20 runs parallel to the Big Wood River and the Proposed Critical Habitat. In 2018, we observed that almost every survey was impacted by apparent high traffic rates that made it difficult to hear. This was especially noticeable along the north side of the river, where the survey route follows the space between the highway and the river, which are sometimes as close as 34 meters. Although we generally tried to pause surveys when vehicles were passing, traffic volume was

such that we may have missed a vocalizing cuckoo anyway. Indeed, during survey period three, in both the Proposed Critical Habitat South and Proposed Critical Habitat North/Stanton Crossing sites, surveyors thought they heard a cuckoo, but the calls only occurred once and were impeded by passing traffic. These potential detections could not be verified and were not recorded as detections. However, we chose to retain and complete these survey routes because, in addition to being Proposed Critical Habitat, this area is the largest continuous swath of high quality cuckoo habitat in Region 4 and has numerous historic observations of cuckoos. Finally, as this is such a large habitat patch, access to some areas is exceedingly difficult; thus, cuckoos may move up or downstream into areas we are not covering.

The amount of suitable riparian habitat in Region 4 overall is quite small – maybe not enough to support a sizable breeding population. While limited in extent, the riparian habitats Region 4, as well as on adjacent private lands, do provide potentially suitable habitat for breeding or migrating cuckoos. It is possible that cuckoos breed in the area in some but not all years, especially dependent upon availability of large insect hatches (M. Johnson, pers. comm.). Indeed, our only other cuckoo detection occurred during the third survey period and potentially could have been a prospecting adult or a recently fledged young bird.

Figure 1.1. The spatial extent and distribution of USFWS Proposed Critical Habitat in Idaho and within Regions 4, 5, and 6. BLM Shoshone Field Office is also shown, as much of survey effort in Region 4 was concentrated in that area.

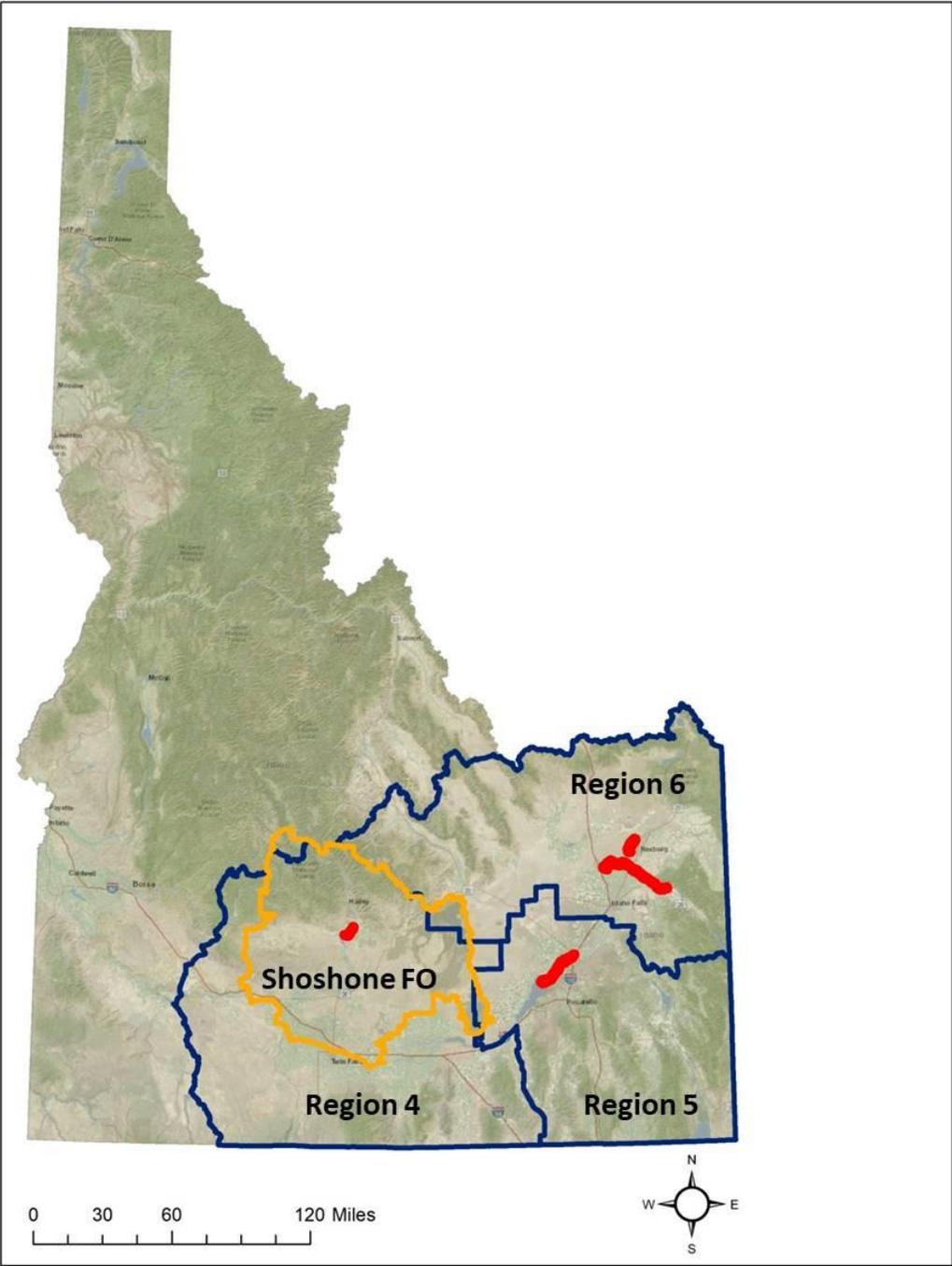


Figure 1.2. Locations of 2018 YBCU survey sites throughout Region 4, including the two sites (in red) where we discontinued surveys due to unsuitable habitat.

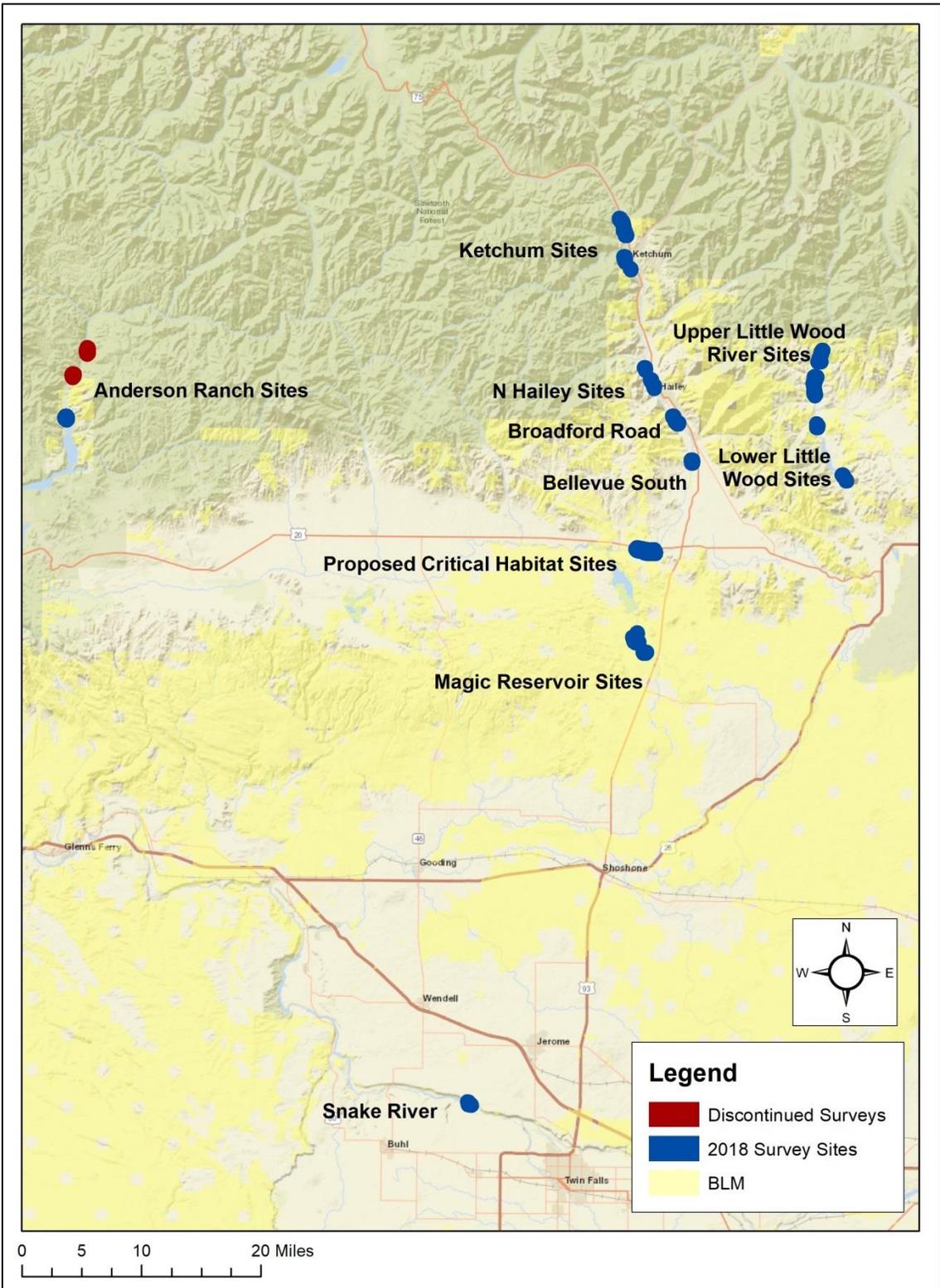


Figure 1.3. The three sites in the upper Little Wood River that did not receive a fourth visit, due to hazards created by the Sharps fire that burned over and around these sites on July 29 and 30, 2018. The photos show some of the burn in and around cuckoo habitat at these sites.

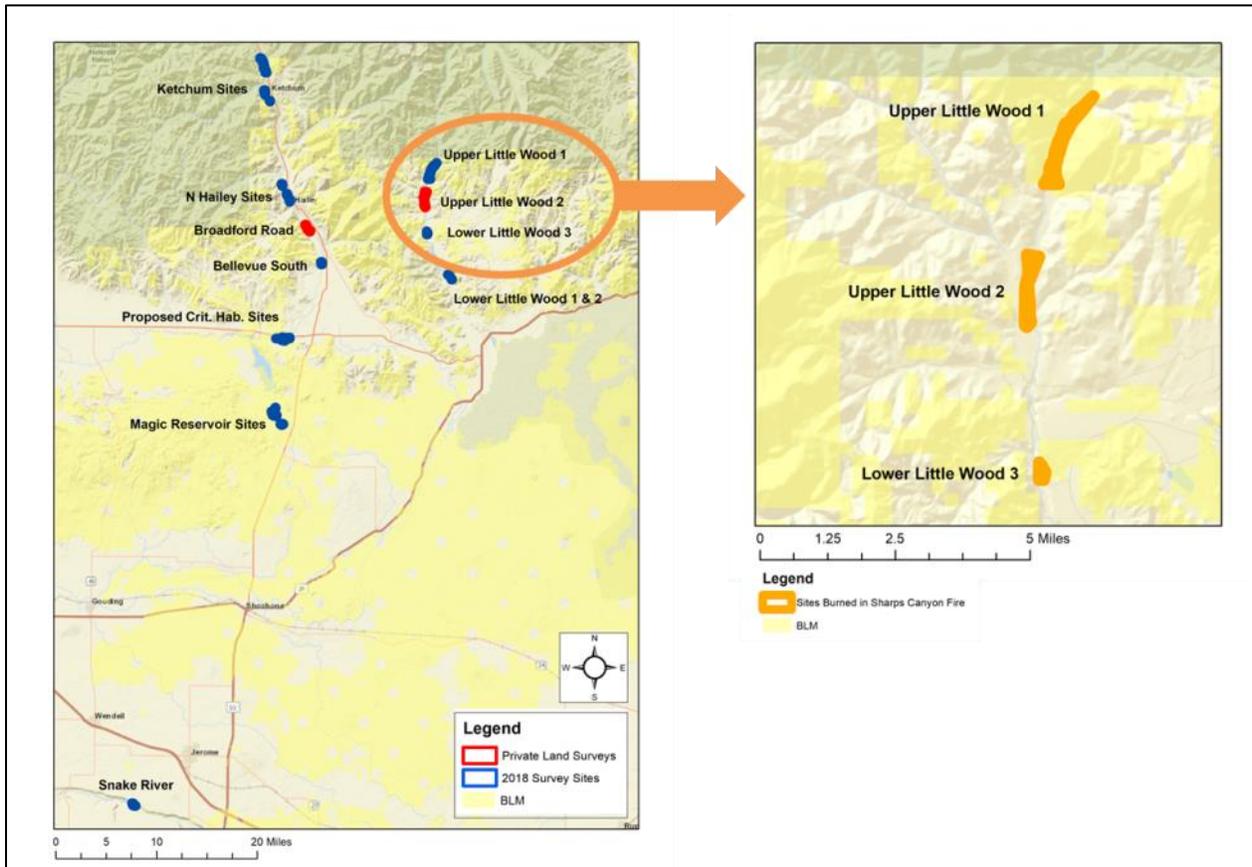
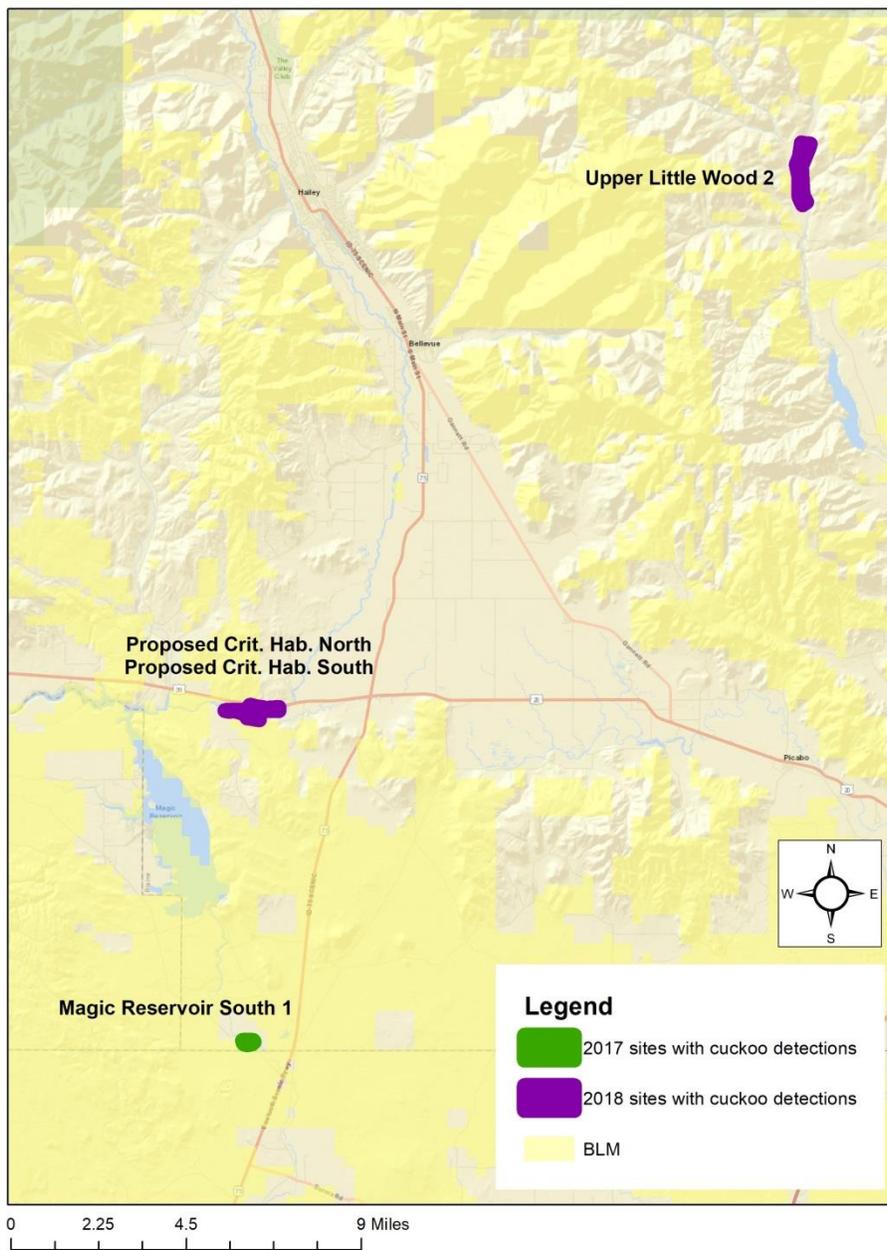


Figure 1.4. The sites in Region 4 with cuckoo detections in 2018 (purple) and 2017 (green).



REGION 5

ABSTRACT

We conducted breeding season surveys for YBCUs in riparian areas with moderately to highly suitable habitat along the Snake River in Region 5 from June 15 – August 8, 2018. Our main objective was to survey the best potential cuckoo habitat within this region. We conducted four repeat surveys in 21 distinct survey sites. Overall, we surveyed 12 sites with historical YBCU surveys and nine new sites. We detected YBCUs 20 different times, at five separate survey sites across the entire survey season. We suspect breeding birds at one site (Snake River 2) because birds were detected in every survey period and we detected two individual cuckoos during one survey morning several times. In addition to sporadic surveys conducted from 2010-2012 by Idaho Fish and Game and Reynolds and Hinckley in 2002 – 2005, our efforts represent one of the most complete, standardized survey seasons across the breadth of cuckoo habitat in Region 5, to date. Our 2018 survey results, combined with historical records, continue to suggest that YBCUs do occur regularly, if sporadically, in this area and some areas of habitat likely support breeding birds on an annual basis. Thus, habitat in Region 5 is important for cuckoo life history including breeding and stopover habitat during migration and we suggest that continued conservation and restoration of habitat could maintain and improve important habitat for cuckoos in this region as part of the greater mosaic of cuckoo habitat across Idaho.

INTRODUCTION

Region 5 contains about 37% of all USFWS Proposed Critical Habitat (FR 2014) in Idaho, as well as other potentially suitable areas of riparian habitat for YBCUs. This section of Proposed Critical Habitat is the southernmost in the state, 70 km south of northern sections within Idaho Department of Fish and Game's (IDFG) Region 6 (Figure 2.1). It begins at Blackfoot, ID and follows the Snake River 30 km southwest until terminating at the American Falls Reservoir. The vegetation community along the main Snake River includes an overstory comprised primarily of narrowleaf cottonwood (*Populus angustifolia*) with some box elder (*Acer negundo*) and understory layers with a mix of russian olive (*Elaeagnus angustifolia*), mixed willow species (*Salix spp.*), Rocky Mountain juniper (*Juniperus scopulorum*), skunkbush (*Rhus trilobata*), red osier dogwood (*Cornus sericea*), gooseberry (*Ribes spp.*), and snowberry (*Symphoricarpos spp.*). Almost all of the Proposed Critical Habitat in this region is surrounded by agricultural fields.

Region 5 has historically been one of the most consistent areas for YBCU sightings from both formal surveys and incidental observations (Figure 2.2). During formal surveys in 2003, Reynolds and Hinckley (2005) detected cuckoos ten times on the main Snake < 10 km north of American Falls Reservoir and had detections in this same stretch in 2004 and 2005. In 2005, Reynolds and Hinckley (2005) report observing a copulating pair at McTucker Creek and, based on observations of copulation and birds carrying nesting material, suggest cuckoos were breeding below Tilden Bridge, along the main Snake, north of American Falls Reservoir in 2003 – 2005. Between the years of 2010 – 2016, IDFG and BLM staff had 9 detections of cuckoos in Region 5 (Abel 2016). In 2017, one cuckoo was detected on formal survey at McTucker Island but from the irrigation canal road, rather than the island itself (Becky Abel, pers. comm.).

Although Reynolds and Hinckley (2005) and IDFG have conducted formal surveys sporadically within the last 15 years, these efforts did not always include all four surveys recommended by the USFWS protocol (Haltermann et al. 2015) for YBCU surveys (Reynolds and Hinckley 2005, Cavallaro 2011, Abel 2016). In 2013 and 2014, IDFG staff made site visits but did not conduct a full survey effort (Abel 2016). In 2015 and 2016, more formal surveys were again performed by IDFG and BLM biologists along the main Snake within Region 5 but again some sites did not receive four visits (Abel 2016). YBCU surveys are intensive and require

adequate surveyor availability and equipment to complete the rigorous USFWS protocol. In 2018, we initiated another large-scale monitoring effort within Region 5. In coordination with IDFG, we developed a study design to accomplish as many surveys as possible with two dedicated technicians in two week intervals at a combination of historic and new sites, according to the USFWS protocol.

METHODS

We conducted playback surveys for YBCUs, using standardized methods (see General Methods section above), at a total of 21 separate survey sites in riparian habitats along the Snake River (Figure 2.3). Survey sites were a combination of those that had previously been surveyed by IDFG and BLM biologists and new sites (Figure 2.3). The majority of survey sites in Region 5 were on BLM or publicly accessible land. We surveyed all 21 sites in late June (June 15-30), early July (July 1-15), late July (July 15-31), and early August (August 1-15). We accessed all but two sites by kayak as this was the most feasible option. Both technicians would kayak to survey sites and either survey on foot or survey from the high water mark, depending on access. Although extremely high flows made the Snake River dangerous early in the season, we were able to accomplish all surveys in Survey Period One. However, we did adjust and refine some survey routes during the first visit of Survey Period Two. These adjusted routes are what we followed for the rest of the survey season.



Picture 3. IBO technician looks back on a cuckoo survey site during a morning's survey window
- Photo by Erik Schoenborn

RESULTS and DISCUSSION

We surveyed 21 sites total, and all sites received a complete season of four repeated surveys. We surveyed 12 historical and nine new sites (Figure 2.3). Two of the 21 sites were on private land and three other sites required coordination with a biologist from the Shoshone-Bannock Tribes Fish and Wildlife Department for access. All but four of our sites occurred within the Proposed Critical Habitat (Figure 2.1).

We surveyed a total of 269 individual points for a total of 1040 individual surveys in Region 5 (excluding discrepancies when cuckoos were detected or when points and survey routes were adjusted due to access and refinement on visit 2). We detected YBCUs on 20 of the total 1040 individual surveys (2%), at ~7% of all survey points, and at five different sites (24%); two of these sites were located directly across the river from each other. To put this in perspective compared to historical numbers: in 2010, during IDFG surveys one cuckoo was detected at one site; in 2012, during IDFG surveys, seven cuckoos were detected across four

sites; in 2015 no cuckoos were detected; and in 2016 one unsolicited cuckoo was detected (Abel 2016). No formal surveys were conducted in 2013 and 2014 (Abel 2016).

At the Snake River 1 site, we detected cuckoos five different times during three separate survey visits (Survey Period 1- and both visits during period 2). During visit one, an observer detected a cuckoo at two different locations at 0734 and 0752 respectively - he suspected this consisted of two different birds based on the direction and timing of his observations. During visit two in Survey Period 2, we again detected cuckoos at two different locations at 0657 and 0724, both of these detections were incidental when birds were heard and observed giving contact calls. During the third visit, still within survey period 2, we detected a single bird at 0729 responding to playback with a contact call.

At Snake River 2 we detected cuckoos eight times during all four visits in all three survey periods. During visit one at 0801 we heard a cuckoo giving a contact call in response to playback and then the bird flew into a tree directly above us. Two additional detections occurred in visit one during the YBCU training, which was held about a week after the first detection on a formal survey occurred. During training, we (in addition to about 20 attendees of the training) detected two different birds in opposite directions of the same point. During visit two in Survey Period 2, we detected cuckoos, in response to playback, at two different points at 0717 and 0801. During visit three, we had one detection at 744 giving a contact call in response to playback. And during visit four, in Survey Period 3, we had two detections of what we strongly suspect were two different cuckoos at 0637 and 0639 giving contact calls in response to playback. Each of these detections were made by a different observer, who was in communication with the other observer, thus confirming that they were each hearing cuckoos and not the other's broadcast. For the Snake River site, we are fairly confident cuckoos were established and breeding based on the number of detections per visit per survey period and the number of times we observed two birds in one morning (at least two, but probably three times).

We detected cuckoos three times during two visits (one and three) at the Ferry Butte South site. During visit one, two birds were detected together at 0907 and 0908, less than 30 m from the observer. One bird was visually observed cooing and the other was heard giving a contact call at the same time and from just in front of the other bird. During visit three, one cuckoo was detected at 0759 giving a contact call in response to playback ~150 m away. This could have been a mated pair but we have no way to determine this and lack of subsequent

detections suggests either a failed breeding attempt or that these birds were not a pair but rather were prospecting for a mate.

At McTucker Island, we detected cuckoos three times during two visits. During visit three, we detected cuckoos at two separate locations, one during formal broadcast at 0812 and one incidentally as we were moving between survey points at 0902 and heard the bird giving a contact call and then observed it perched in a tree. This could potentially have been the same bird as the first detection following us as we surveyed. During visit four, we detected a single bird at 0957 giving contact calls in response to playback. All birds were detected less than an estimated 50 m from the observer.

We detected a single bird at the Snake River 10 site during the final visit in the third and final survey period. We detected this bird giving a unique “chuchuchu” rolling call and one contact call in response to the playback at 0759. This bird was less than 100 m from the observer. This was the first time we detected a bird at this site, and interestingly, it was in the last survey period (3 August 2018). The Snake River 10 site is spatially disparate from other sites where we detected cuckoos, the nearest sites being Snake River 1 and Snake River 2 about 18 km downstream (Figure 2.2). Additionally, the Snake River 10 site does not occur within Proposed Critical Habitat but 18 km upstream (Figure 2.1). However, it does consist of high quality cuckoo habitat with cottonwood, willow, and skunkbush mixed with juniper, and adjacent to the site there is more natural habitat consisting of juniper and sage rather than solid agriculture. Potentially, this could have been a bird that was unsuccessful at breeding and was initiating migratory movements from a more northern location in Idaho, or it could have been a fledgling moving prior to migration.

We cannot determine with certainty the actual number of cuckoos detected throughout the season. However, we estimate that we detected ~7 – 8 individuals throughout the season, based on the number of times we detected two different birds in one survey morning plus other observations of single birds consistently at other sites. We observed two birds several different times at Snake River 1 and Snake River 2. However, as those sites are directly across the river from each other, conservatively, this could have represented just one pair of birds moving back and forth across the river. Alternatively, there could have been three individuals or even two pairs in this area. We observed two birds at one point at the Ferry Butte South site during one survey period and a single bird on a subsequent survey, and we had multiple observations of

cuckoos at McTucker Island, two of which occurred in one morning, but potentially this was one bird following the surveyor. Importantly, we observed cuckoos at sites with historic observations from surveys conducted by both IDFG (in 2011, 2012, 2015 – 2016) and by Reynolds and Hinckley (in 2002 – 2005). These sites included Snake River 1, Snake River 2, McTucker Island, and Ferry Butte South (referred to as Tilden Bridge in Reynolds and Hinckley 2005), further solidifying this habitat as being an important stronghold for YBCUs along the Snake River above the American Falls Reservoir. As cuckoos are long-lived birds in the wild (up to 7 years; M. Johnson, pers. comm.) the ongoing presence of cuckoos at these sites could indicate site fidelity and also that subsequent generations of cuckoos have been using the same historic sites over time. As such, we recommend conserving and maintaining the integrity of this habitat and potentially comparing it to other, seemingly suitable, areas of habitat where no cuckoos are detected to determine differences that may be less apparent.

Figure 2.1. The spatial extent and distribution of USFWS Proposed Critical Habitat in Idaho and within Regions 4, 5, and 6. BLM Shoshone Field Office is also shown, as much of survey effort in Region 4 was concentrated in that area. The inset shows 2018 survey sites in Region 5 (green) and their overlap with USFWS Proposed Critical Habitat (purple).

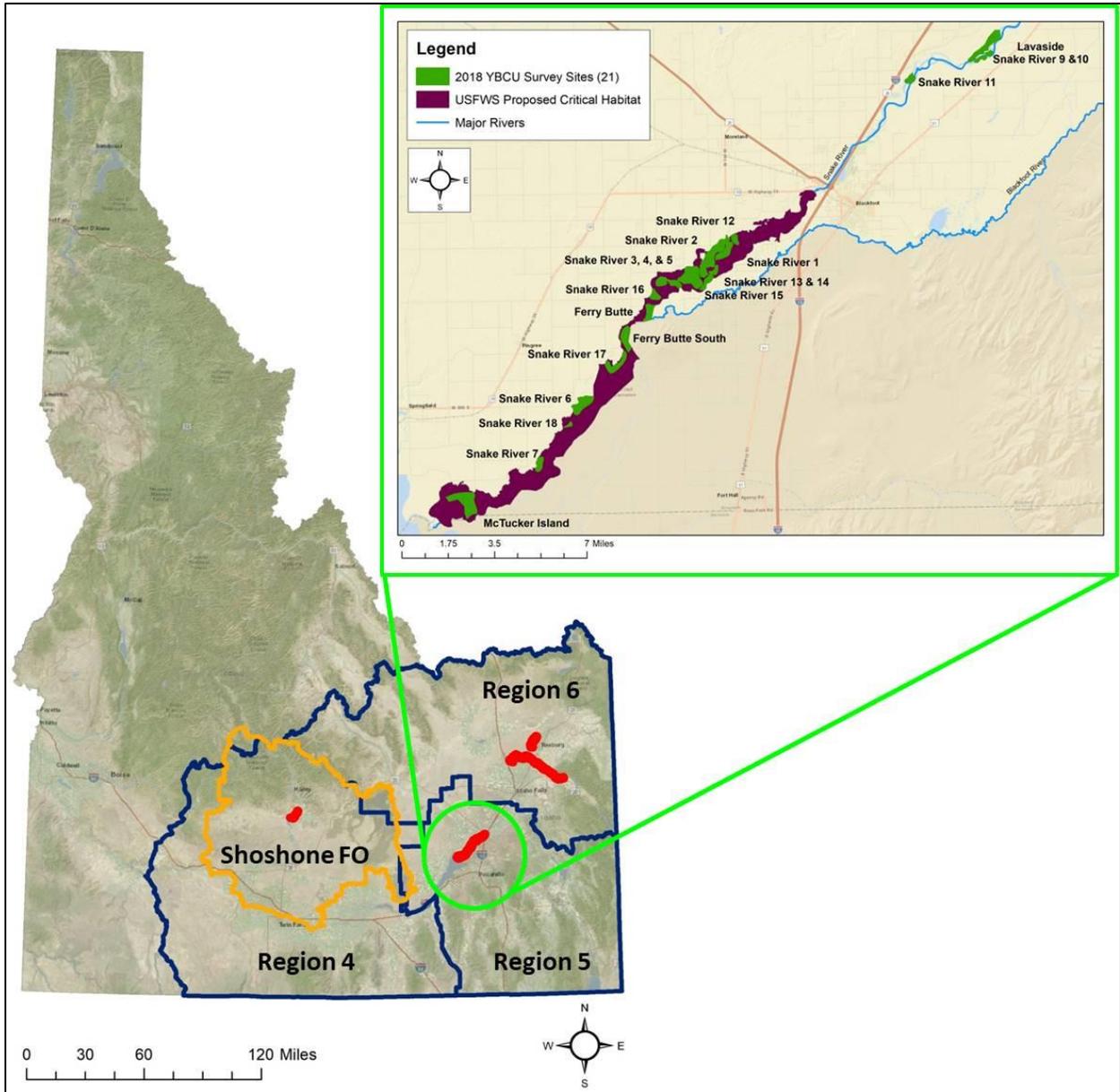
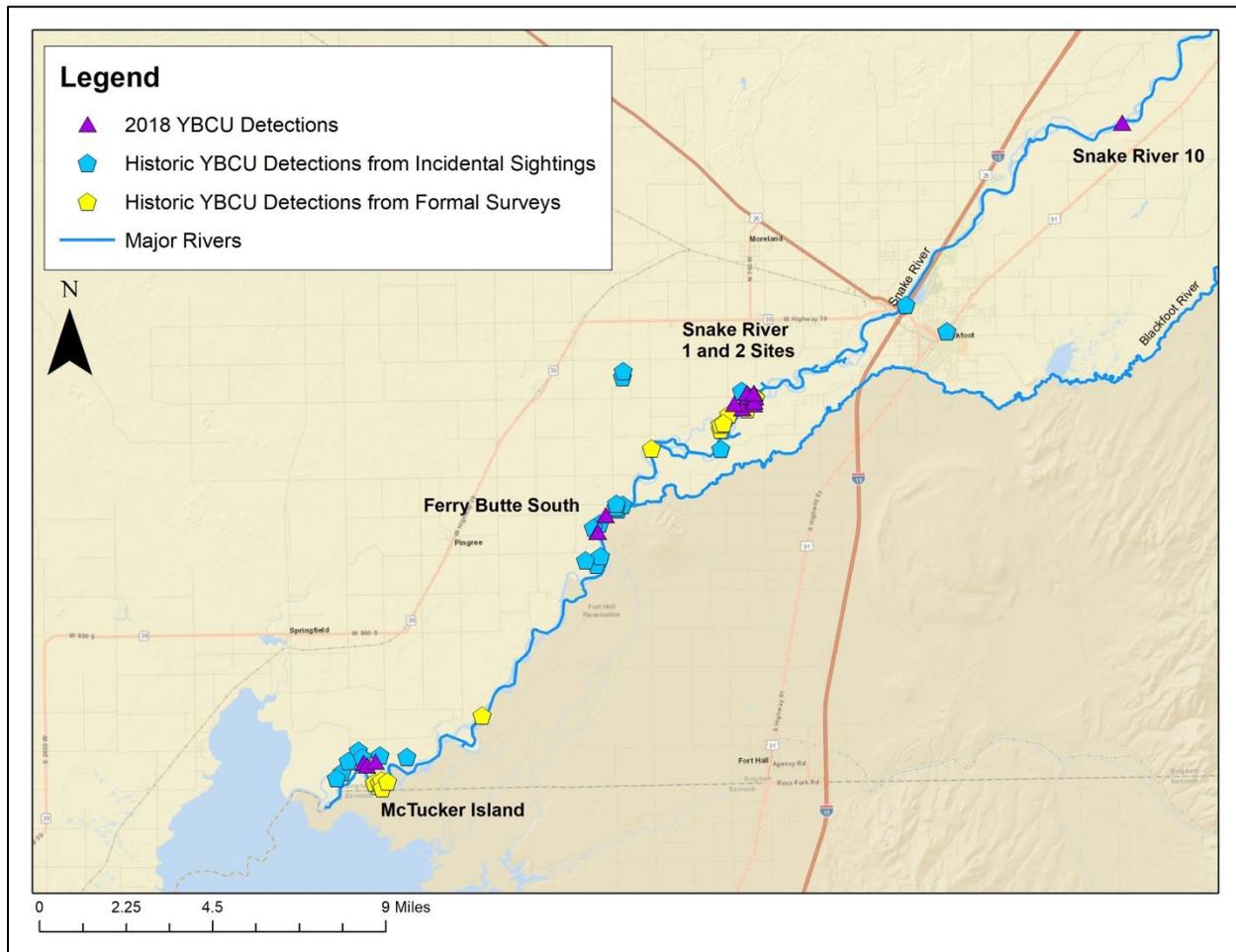


Figure 2.2. Historic YBCU detections during formal surveys (yellow), incidental sightings (blue), and their spatial distribution compared with 2018 detections (purple) in Region 5.



REGION 6

ABSTRACT

We conducted breeding season surveys for YBCUs in riparian areas with moderately to highly suitable habitat across IDFG Region 6 in Idaho from June 15 – August 8, 2018. Our objective was to survey the best potential cuckoo habitat within Region 6, including sites with previous cuckoo surveys and detections, as well as new areas. We conducted four repeat surveys in 30 distinct survey sites along the South Fork, Henry’s Fork and main stem Snake River and one floating survey along the Henry’s Fork. Slightly fewer than half the sites were historically surveyed sites (13; including the float route) and 17 sites were new. Region 6 was unique among other regions because 10 surveys required private landowner permission to access and/or complete surveys at sites. We detected YBCUs six times throughout the season. There was potential breeding at Twin Bridges 1, as we detected a single YBCU four times; once on each survey visit. We also detected cuckoos two different times during the Henry’s Fork canoe route. In addition to patchy surveys conducted from 2010 – 2012 by IDFG and by Reynolds and Hinckley (2005) in 2002 – 2005, our efforts represent one of the most complete, standardized survey seasons across the breadth of cuckoo habitat in Region 6 to date. Our 2018 survey results, combined with historical records, continue to suggest that YBCUs do occur regularly, if sporadically, in this area and some areas of habitat likely support breeding birds on an annual basis. Thus, habitat in Region 6 is important for cuckoo life history including breeding and stopover habitat during migration and we suggest that continued conservation and restoration of habitat could maintain and improve important habitat for cuckoos in this region as part of the greater mosaic of cuckoo habitat across Idaho.

INTRODUCTION

Region 6 contains the most USFWS Proposed Critical Habitat (FR 2014) in Idaho at ~57%, as well as other potentially suitable areas of riparian habitat for YBCUs. The total area of Proposed Critical Habitat along the Henry's Fork and Teton Rivers is ~14 km² and along the South Fork of the Snake into the confluence with the main Snake is a total of ~ 46 km² (Figure 3.1). These sections of Proposed Critical Habitat are the northernmost in the state, 70 km north of southern sections within IDFG Region 5 and 182 km northeast of the isolated section in Region 4. The vegetation community along the South Fork Snake River includes the largest contiguous riparian cottonwood gallery in the western United States (BLM 2018) comprised primarily of narrowleaf cottonwood (*Populus angustifolia*) and understory layers with a mix of russian olive (*Elaeagnus angustifolia*), mixed willow species (*Salix spp.*), Rocky Mountain juniper (*Juniperus scopulorum*), red osier dogwood (*Cornus sericea*), gooseberry (*Ribes spp.*), and snowberry (*Symphoricarpos spp.*). Almost all of the Proposed Critical Habitat in this region is surrounded by agricultural fields.

Similar to Region 5, Region 6 has a history of YBCU sightings from both formal surveys and incidental observations (Figure 3.2). During formal surveys in 2003, Reynolds and Hinckley (2005) detected cuckoos 13 times on the South Fork Snake, three times at Deer Parks Wildlife Mitigation Unit (Deer Parks WMU), and once at Market Lake Wildlife Management Area (Market Lake WMA). They had detections in these same areas in 2004 (12 along South Fork Snake and four detections comprising at least three birds at Deer Parks WMU) and 2005 (20 detections along the South Fork Snake, three pairs and a single bird were observed during one survey visit at the Twin Bridges area, Reynolds and Hinckley 2005). IDFG and Bureau of Land Management (BLM) staff conducted surveys from 2010 – 2012 in this area; in 2010 cuckoos were detected five times at four sites, in 2011 three times at two sites, in 2012 one time at one site (Cavallaro 2011, Abel 2016). In 2013 and 2014, IDFG staff made site visits but did not conduct a full survey effort but scattered formal surveys were resumed in 2015 with a single detection at one site and 2016 when no cuckoos were detected (Abel 2016). Although Reynolds and Hinckley (2005) and IDFG conducted sporadic formal surveys between 2003 and 2016, these surveys did not always include all four surveys as recommended in the USFWS protocol (Halterman et al. 2015) for YBCU surveys (Reynolds and Hinckley 2005, Cavallaro 2011, Abel 2016). YBCU surveys are intensive and require adequate surveyor availability and equipment to

complete the rigorous USFWS protocol. In 2018, we initiated another large-scale monitoring effort within Region 6. In coordination with IDFG, we developed a study design to accomplish as many surveys as possible at a combination of historic and new sites.

METHODS

We conducted target playback surveys for YBCUs, using standardized methods (see General Methods section above), at a total of 30 separate survey sites in riparian habitats along the Snake River and one canoe route along the Henry's Fork (Figure 3.3; Table 3.1). Survey sites included a combination of those previously surveyed by IDFG and BLM biologists and new sites (Figure 3.3). The majority of sites in Region 6 were on BLM or publicly accessible land, but we coordinated with private landowners by phone prior to each survey visit at 10 total sites. We surveyed all 30 sites and the canoe route in late June (June 15-30), early July (July 1-15), late July (July 15-31), and in early August (August 1-15). We used jet boats to access 11 sites, which required assistance from, and coordination with, IDFG biologists and staff certified to pilot jet boats (Figure 3.4). We surveyed all sites on foot, except for the canoe route during which we broadcasted continuously at 30 s intervals throughout the entire 5 – 6 hour survey. Early in the season, extremely high flows made the Snake River dangerous and many sites were flooded and difficult or impossible to access. Although we did cover at least several survey points in each site during Survey Period 1, we generally expanded and refined surveys during the first visit of Survey Period 2. These were the routes we followed for the rest of the season. Although low flows made jet boat access to some survey sites dangerous and difficult later in the season, we were still able to accomplish the fourth and final visit at all sites.



Picture 4. A jet boat survey day on the South Fork of the Snake - Photo by Tempe Regan

RESULTS and DISCUSSION

We accomplished the largest survey effort in 2018 for YBCUs, in terms of area and points surveyed, in Region 6. We surveyed 30 sites and one canoe route, and all received a complete season of four repeated surveys (Figure 3.3). We surveyed 13 historic and 17 new sites (Figure 3.3). The canoe route had also been surveyed previously. Ten of the 30 sites were on private land. We accessed 11 sites using jet boats. Six sites were outside the Proposed Critical Habitat (Figure 3.1).

We surveyed a total of 348 individual points for a total of 1238 broadcast surveys in Region 6 (excluding discrepancies when cuckoos were detected). We detected YBCUs on six of the total 1238 individual surveys (0.03%), at ~0.1% of all survey points, and at two different sites (0.6%); two of these detections occurred during the canoe route (Figure 3.2). Of all six detections in 2018, just one occurred outside Proposed Critical Habitat along the Henry's Fork. To put our 2018 detections in perspective compared to historical detections; in 2010, during IDFG surveys, 15 detections occurred at four sites; in 2011, three detections occurred at two

sites, and in 2012 a cuckoo was detected at one site (Cavallaro 2011, Abel 2016). In 2015, a single cuckoo was detected once and in 2016 there were no detections (Abel 2016).

At the Twin Bridges 1 site, we detected a single cuckoo once during each of the four visits across the survey season. During visit one, we detected a cuckoo calling unsolicited at 0646 while walking between points. During visit two, we detected a cuckoo giving a contact call in response to playback at 0707, just 6 m from where the first detection occurred. We detected a single bird on visit three (0646) and visit four (0640), and interestingly, these detections, although in more eastern location, were also close to each other. Although we never observed two birds together at this site in a single visit, we did observe cuckoos once each of the four visits across three formal survey periods, which according to the USFWS protocol (Haltermann et al. 2015) is enough to suggest this was a “probable breeding territory”, which can be determined by “three or more total detections in an area during at least three survey periods and at least 10 days between each detection.”

The other two detections occurred on the Henry’s Fork canoe route between Red Road and Warm Slough. During visit three at 0646 we heard a cuckoo give two series of contact calls in response to playback. During visit four, on the final survey of the season, we detected a cuckoo at 0808 when it flew in silently and perched in a dead cottonwood across the river from us for about 15 seconds before taking off to the south. This bird never vocalized but was clearly investigating the playback. These two detections were four km apart, and it is unclear if they represent the same or different birds.

We cannot determine with certainty the actual number of cuckoos detected throughout the season in Region 6. However, we estimate that we detected 3 – 4 individuals based on the number of times and locations where we detected birds. The two observations during the canoe survey, in two separate survey periods (two and three), could also have been two separate birds since the locations were so far apart. However, it could also have been a single adult moving around towards the end of the breeding season, or after a failed breeding attempt. We observed a single cuckoo four times at Twin Bridges 1. Based on the USFWS protocol, we estimate probable breeding occurred here; thus, these observations could account for two birds. Historically, the Twin Bridges and Railroad Bridge area has been a stronghold for cuckoo detections and breeding pairs have been observed here during prior formal surveys (Reynolds and Hinckley 2005). As cuckoos are long-lived birds in the wild (up to 7 years; M. Johnson,

pers. comm.) the ongoing presence of cuckoos at these sites could indicate site fidelity and also that subsequent generations of cuckoos have been using the same historic sites over time. As such, we recommend conserving and maintaining the integrity of this habitat and potentially comparing it to other, seemingly suitable, areas of habitat where no cuckoos are detected to determine differences that may be less apparent.

Figure 3.1. The spatial extent and distribution of USFWS Proposed Critical Habitat in Idaho and within Regions 4, 5, and 6. BLM Shoshone Field Office is also shown, as much of survey effort in Region 4 was concentrated in that area. The inset shows 2018 survey sites in Region 6 (green) and their overlap with USFWS Proposed Critical Habitat (purple).

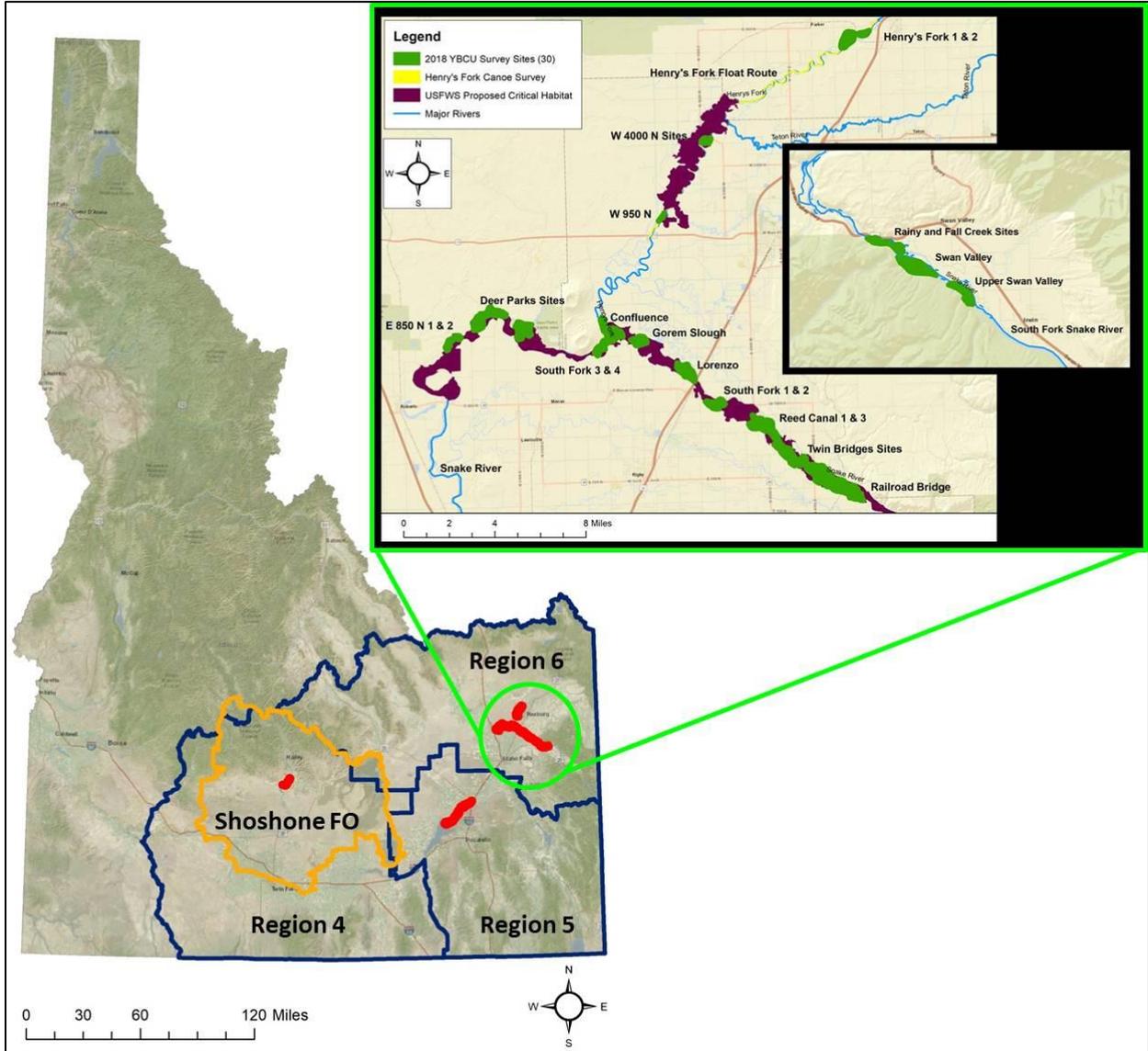


Figure 3.2. Historic YBCU detections during targeted surveys (yellow), incidental sightings (blue), and their spatial distribution compared with 2018 detections (purple) in Region 6.

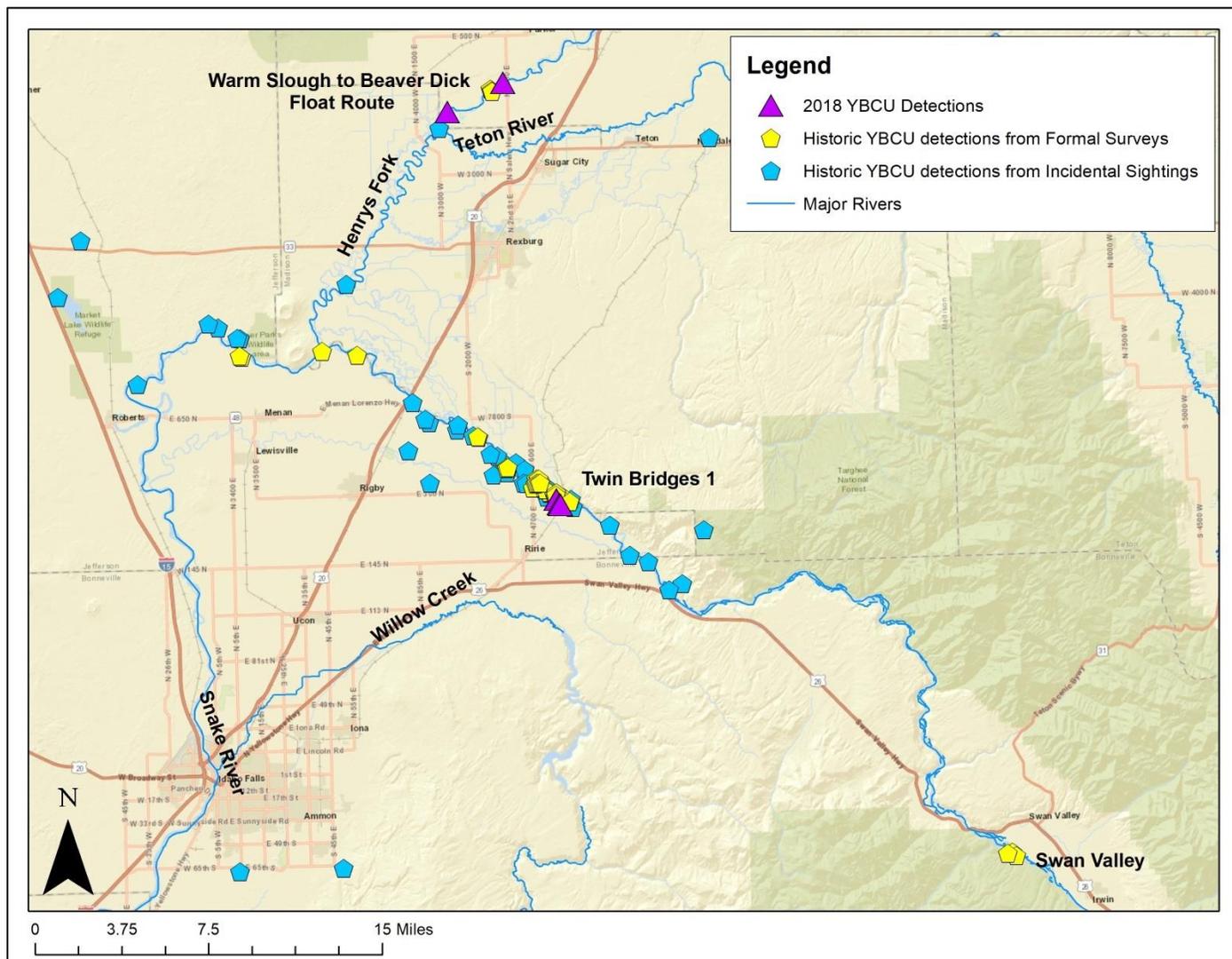


Figure 3.3. Locations of all 2018 YBCU survey sites (30) and one canoe survey throughout Region 6. Sites with historical surveys, that were also surveyed in 2018, are shown in purple; new sites surveyed for the first time in 2018, are shown in green.

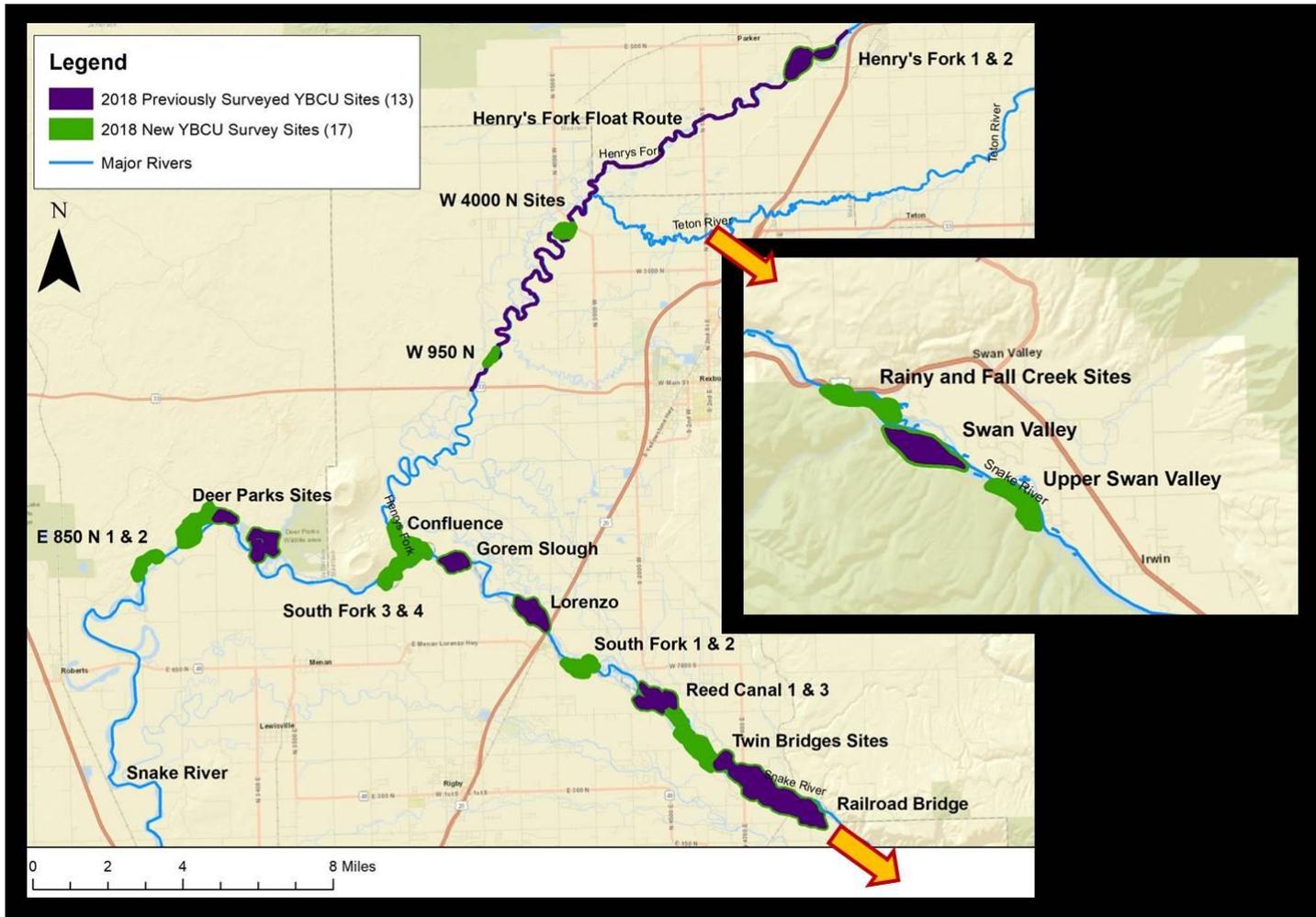
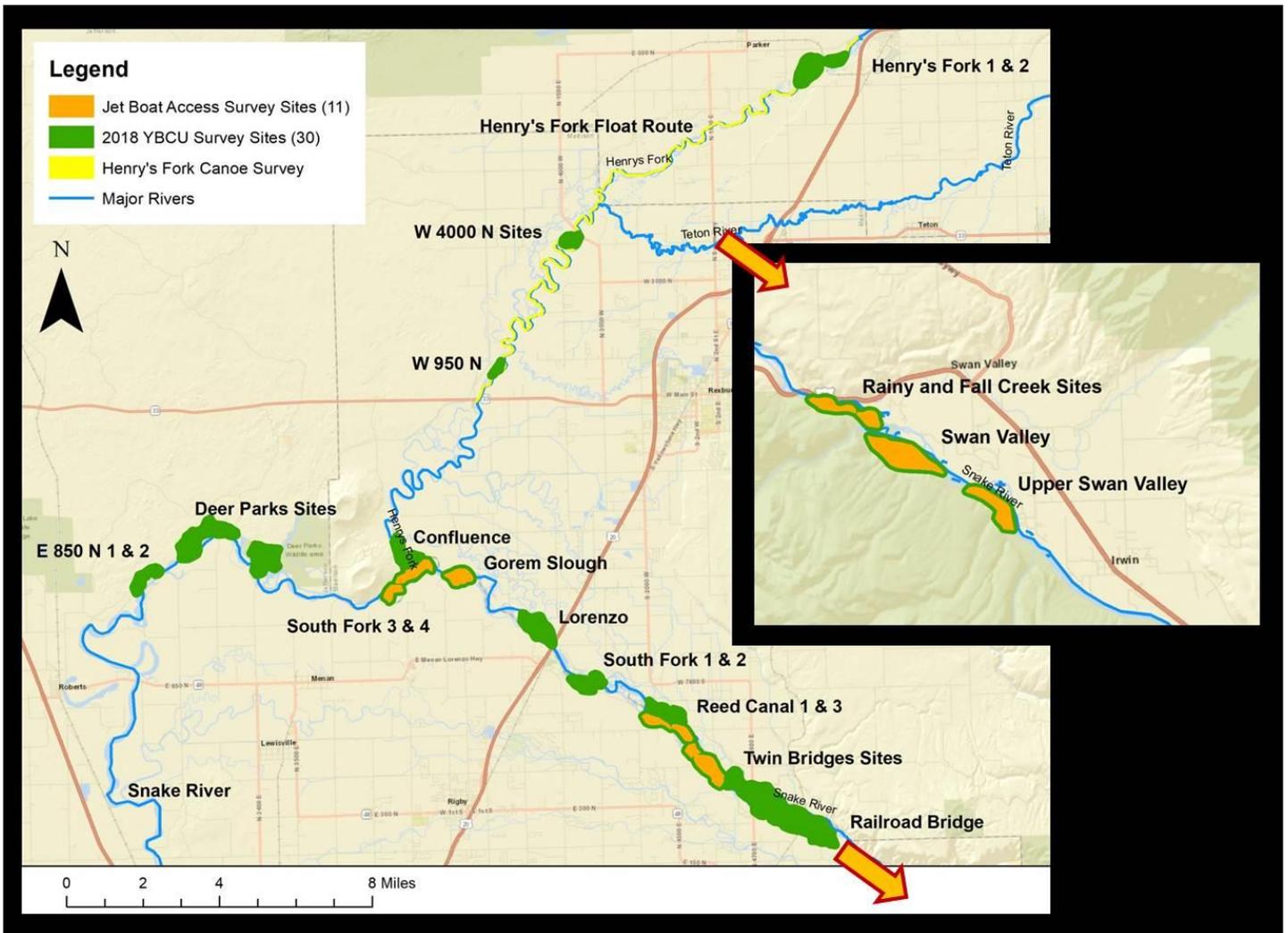


Figure 3.4. Locations of all 2018 YBCU survey sites (30), and one canoe survey throughout Region 6. Sites requiring jet boats for access are shown in orange.



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