CENTER for BIOLOGICAL DIVERSITY Because life is good.

February 28, 2022

Tom Vilsack
Secretary of Agriculture
U.S. Dept. of Agriculture
1400 Independence Ave., S.W.
Washington, D.C. 20250
agsec@usda.gov

Deb Haaland
Secretary of the Interior
U.S. Dept. of the Interior
1849 C Street, N.W.
Washington, D.C. 20240
exsec@ios.doi.gov

Randy Moore, Chief
U.S. Forest Service
201 14TH Street, SW
Washington, DC 20024
randy.moore@usda.com

Martha Williams, Acting Director
U.S. Fish and Wildlife Service
1849 C Street, N.W.
Washington D.C. 20240
Marth_Williams@fws.gov

Michiko Martin, Regional Forester
U.S. Forest Service, Southwest Region
333 Broadway SE
Albuquerque, NM 87102
michiko.martin@usda.gov

Amy Lueders, Regional Director
U.S. Fish and Wildlife Service
P.O. Box 1306
Albuquerque, NM 87102
RDLueders@fws.gov

Kurt Davis, Acting Forest Supervisor
Coronado National Forest
300 W. Congress Street
Tucson, AZ 86001
kurt.j.davis@usda.gov

Mark Lamb, Acting Arizona State Supervisor
U.S. Fish and Wildlife Service
2321 West Royal Palm Road, Suite 103
Phoenix, AZ 85021
mark_lamb@fws.gov

Dear Secretaries Vilsack and Haaland, Chief Moore, Acting Director Williams, Regional Forester Martin, Regional Director Lueders, Acting Supervisor Davis, and Acting Supervisor Lamb,

RE: Sixty-Day Notice of Intent to Sue the U.S. Forest Service and the U.S. Fish and Wildlife Service for Endangered Species Act Violations for Failing to Ensure that Forest Service Authorized Cow Grazing on the Coronado National Forest Does Not continue destroying Western Yellow-Billed Cuckoo, Chiricahua Leopard Frog, and Northern Mexican Garter Snake Critical Habitat.

The U.S. Department of Agriculture Secretary, U.S. Forest Service ("USFS") Chief, USFS Southwest Region Regional Forester, USFS Coronado National Forest Supervisor, U.S. Secretary of the Interior, U.S. Fish and Wildlife Service ("USFWS") Director, USFWS Region 2 Director, and USFWS Arizona Ecological Services Director are hereby notified by the Center for Biological Diversity ("Center") and Maricopa Audubon Society of our

intention to file suit 60 days after the filing of this Notice for unremedied violations of the Endangered Species Act ("ESA"), 16 U.S.C. §§ 1531-1544, and its implementing regulations, 50 C.F.R. §§ 402.01-402.17, and the Administrative Procedure Act (“APA”), 5 U.S.C. §§ 701-706.

We file this Notice in connection with (1) USFWS' September 30, 2021, Biological Opinion on Ongoing Grazing on the Coronado National Forest (2021 Biological Opinion)[1] and (2) USFS' reliance on this unlawful and arbitrary consultation document in allowing continued destructive cow grazing on the Coronado National Forest.

We intend to (1) challenge the 2021 Biological Opinion's failure to protect designated riparian Critical Habitat by failing to utilize “the best scientific . . . data available.”[2], and (2) to force reinitiation of consultation to redo the illegal 2021 Biological Opinion to incorporate new information documenting that Coronado National Forest cow grazing is affecting Yellow-billed Cuckoo, Chiricahua Leopard Frog and Northern Mexican Gartersnake and their designated riparian Critical Habitat in a manner and to an extent not considered in the 2021 Biological Opinion.

In this Notice, the Center and Maricopa Audubon provide pertinent new and previously ignored background information and identify the legal violations that we intend to challenge in federal court should USFWS and USFS fail to correct these violations within sixty 60 days.

We will continue to be available to discuss these matters at your convenience; however, as destructive illegal cow grazing continues, we are not willing to further delay filing a lawsuit should USFWS and USFS continue failing to correct these violations within 60 days.

[1] Correspondence to Coronado National Forest Supervisor Kerwin Dewberry, from USFWS Arizona Field Supervisor Jeffrey A. Humphrey; RE: Biological Opinion on Ongoing Grazing on the Coronado National Forest, Graham, Cochise, Pima, Pinal, and Santa Cruz Counties, Arizona and Hidalgo County, New Mexico. AESO/SE, 2-21-98-F-399, 2-21-98-F-399R1, 02EAAZ00-2019-F-0867, September 30, 2021 ("2021 Biological Opinion")

[2] 16 U.S.C. § 1536(a)(2).

EXECUTIVE SUMMARY

This Notice addresses the peril facing Yellow-billed Cuckoo, Northern Mexican Gartersnake, Chiricahua Leopard Frog and Sonora Chub on the Coronado National Forest. Cow grazing contributed to these species' endangerment and federally listing.[3] Cow grazing continues contributing to the further endangerment and the impediment of recovery for these species as documented by USFWS own species experts, as well as by our own surveys.[4]

Climate change and drought now exacerbate and amplify the deleterious effects of cow grazing[5] on the Coronado National Forest riparian areas. In the words of USFWS own species expert,

> "**We cannot control climate change, but we can control livestock impacts from grazing, trampling, erosion, and soil compaction**."[6]

But, currently, riparian livestock impacts are not being controlled. Riparian areas on the Coronado National Forest have experienced widespread loss of essential streamside woody vegetation especially and widespread failure of the recruitment and regeneration of these essential saplings and shrubs. USFWS officials, as well as this Notice, document this grazing damage.

As USFWS officials document, and we document in this Notice,

> "**At all sites surveyed, young trees were lacking**, with the exception of some small, isolated pockets of saplings."[7]

This widespread riparian damage is the result of the fact that, instead of providing cow exclosures for designed riparian Critical Habitat, like all other Forests throughout the Region, the Coronado National Forest uses cow grazing utilization metrics to govern riparian habitat conditions that do not protect riparian dependent endangered species.

---

[3] Final Listing Rule of the Chiricahua Leopard Frog (*Rana chiricahuensis*), Department of the Interior USFWS, Federal Register, Vol. 67, No. 114, June 13, 2002, page 40790.; Final Rule for Listing and Designation of Critical Habitat for the Chiricahua Leopard Frog, Final Rule, Department of the Interior USFWS, Federal Register, Vol. 77, No. 54, March 20, 2012, page 16335.; Final Rule for Listing for the Northern Mexican Gartersnake and Narrow-Headed Gartersnake, Department of the Interior USFWS, Federal Register, Vol. 79, No. 130, Page 8678, July 8, 2014.; Proposed Rule for Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Proposed Rules, Department of the Interior USFWS, Federal Register, Vol. 79, No. 158, August 15, 2014, page 48558.; Determination of Threatened Status for the Western Distinct Population Segment of the Yellow-billed Cuckoo (*Coccyzus americanus*), Federal Register, Vol. 79, No. 192, Page 59992, October 3, 2014. Designation of Critical Habitat for the Northern Mexican Gartersnake and Narrow-Headed Gartersnake, Proposed Rules, Department of the Interior USFWS, Federal Register, Vol. 85, No. 82, April 28, 2020, page 23623-4.; Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Final Rule, Department of the Interior USFWS, Federal Register Vol. 86, No. 75, Wednesday, April 21, 2021, page 20813. Species Profile for Sonora Chub (*Gila ditaenia*), USFWS Environmental Conservation Online System, web accessed: February 21, 2022, https://ecos.fws.gov/ecp/species/1394#candidate .

[4] Coronado National Forest (FS) Grazing Consultation Supplemental Summary of Concerns, U.S. Fish and Wildlife Service, October 29, 2018.; Email from Sferra, Susan, to: Servoss, Jeff; RE: suggestion from Shawn [Sartorius] on grazing BO; July 5, 2019.; Yellow-billed Cuckoo Protocol Survey Results at Five Sites on the Coronado National Forest, Arizona 2021, Draft, Susan Sferra, U.S. Fish and Wildlife Service, Arizona Ecological Services, November 2021.; Grazing Impacts Input, Susan Sferra, November 11, 2021.

[5] Adapting to Climate Change on Western Public Lands: Addressing the Ecological Effects of Domestic, Wild and Feral Ungulates; Robert L. Beschta, Debra L. Donahue, Dominick A. DellaSala, Jonathan J. Rhodes, James R. Karr, Mary H. O'Brien, Thomas L. Fleischner, and Cindy Deacon Williams, Environmental Management (2013) 51:474-491.; Livestock Production, Climate Change, and Human Health: Closing the Awareness Gap, Debra L. Donahue, Environmental Law Reporter, 45 ELR 11112, 12-2015, http://ssrn.com/abstract=2696741; citing: *See, e.g.*, Beschta et al., *supra* note 59, at 476-81; Ripple et al., *supra* note 2, at 2, 3. Almost nothing is known, however, about the ability of shrublands to sequester carbon. *See* Jack A. Morgan et al., *Carbon Sequestration in Agricultural Lands of the United States*, 65 J. Soil & Water Conservation 6A, 7A (2010), doi:10.2489/jswc.65.1.6A. This is a "critical research need," *see id.*, particularly since shrubs dominate large areas of the public lands.; Climate change scenarios of herbaceous production along an aridity gradient: vulnerability increases with aridity, Carly Golodets, Marcelo Sternberg, Jaime Kiegel, Bertrand Boeken, Azlmen Henkin, No'am G. Silgmean and Eugene D. Ungar, DOI 10.1007/s00442-015-3234-5, February 7, 2015.; Grazing Impacts Input, Susan Sferra, November 11, 2021.

[6] Grazing Impacts Input, Susan Sferra, November 11, 2021, page 3.

[7] Yellow-billed Cuckoo Protocol Survey Results at Five Sites on the Coronado National Forest, Arizona 2021, Draft, Susan Sferra, U.S. Fish and Wildlife Service, Arizona Ecological Services, November 2021, page 2.

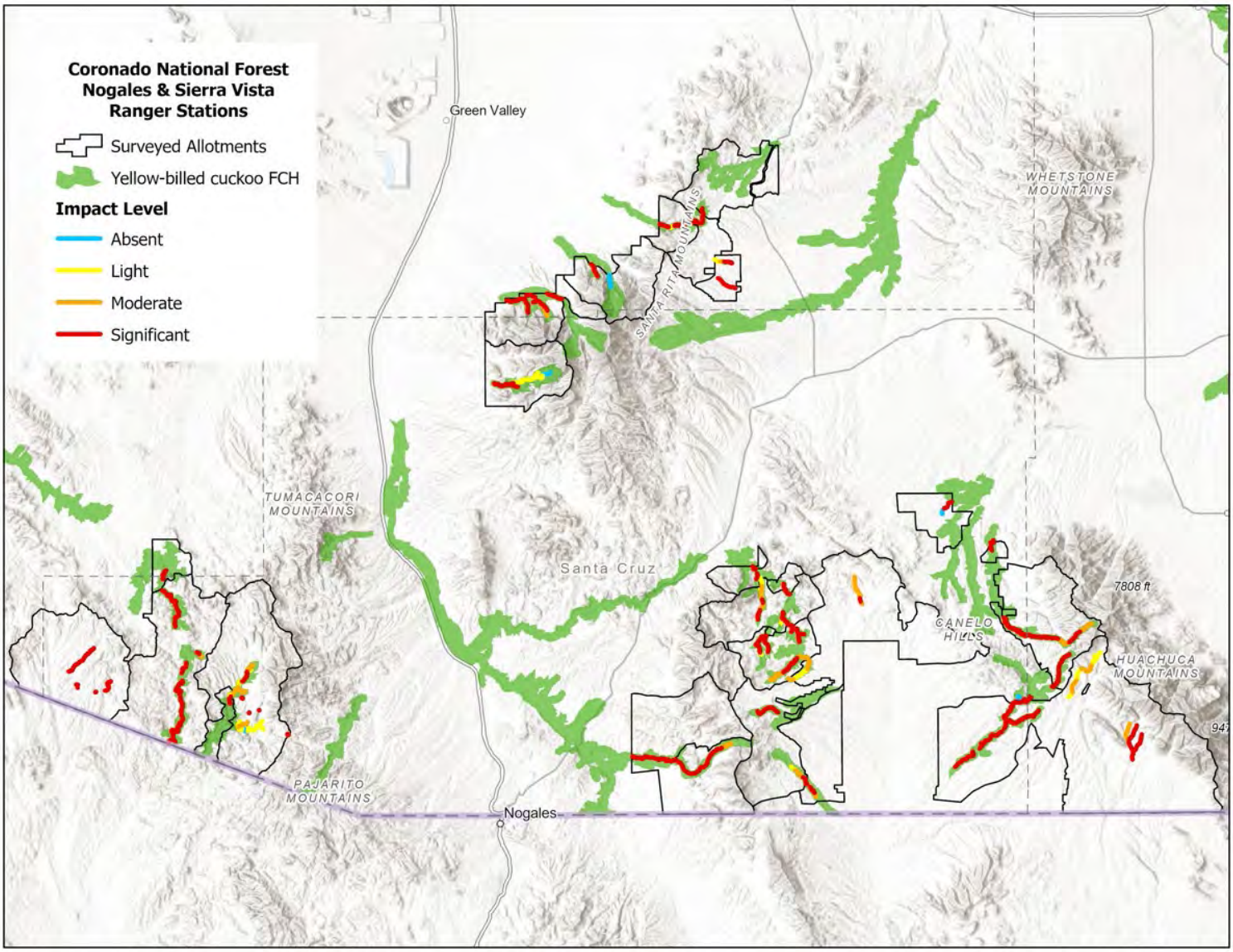
And USFWS species experts agree:

> "**We all discussed that the range grazing measures are inadequate to measure needs for sensitive/listed for wildlife**."[8]

In 2020 and 2021, the Center surveyed 114 miles of designated riparian Critical Habitat on the Coronado National Forest. Of the 114 miles surveyed, 67.4 miles had "significant" cow grazing impacts and 16.3 miles had "moderate" impacts.

In other words, in 2020 and 2021, 59.1% of the 114 miles of designated riparian Critical Habitat surveyed on the Coronado National Forest showed significant cow grazing impacts and 73.4% showed moderate or significant impacts.

Graphically displayed for designated riparian Yellow-billed Cuckoo Critical Habitat on the Nogales and Sierra Vista Ranger Districts alone, our findings of cow grazing impacts dramatic:



[8] Email from Sferra, Susan, to: Servoss, Jeff; RE: suggestion from Shawn [Sartorius] on grazing BO; July 5, 2019.

In the 2021 Biological Opinion for Yellow-billed Cuckoo, USFWS states,

> "INCIDENTAL TAKE STATEMENT … AMOUNT OR EXTENT OF TAKE … We do not anticipate the incidental take of yellow-billed cuckoos from livestock grazing on the Forest based on the analysis of consistent yellow-billed cuckoo occupancy across survey sites in areas subject to various current grazing practices … (see Effects of the Action, above)."[9]

The parenthetical "Effects of the Action" here are "forage utilization standards…and rest-rotation grazing activities."[10]

The basis for USFWS' conclusion to "not anticipate the incidental take of yellow-billed cuckoos" is problematic for two basic reasons: (1) the "analysis of consistent yellow-billed cuckoo occupancy…" is dependent on data collection that ended in 2017; and (2) cow grazing in Yellow-billed Cuckoo Critical Habitat is governed by cow "forage utilization standards…and rest-rotation grazing activities," which are not applicable for the protection of threatened and endangered riparian species.

Relying on data whose collection ended in 2017 ignores the last four years of extreme drought. This arbitrary and capricious act forecloses any evaluation of the near-term effect of prolonged drought on endangered species and designated Critical Habitat, particularly the lost essential streamside vegetation. This vegetation loss is worsened by the use of this grazing promotion and perpetuation scheme that is not relevant to the protection of endangered species and their designated riparian Critical Habitat. This reliance on data whose collection ended in 2017, is a violation of the Administrative Procedure Act, which is intended to stop conclusions that are "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law."[11] This act also violates the Endangered Species Act requirement to use “the best scientific . . . data available.”[12]

As our surveys have revealed, and as USFWS' own species experts have documented, use of this cow grazing utilization and rest-rotation scheme has resulted in widespread degradation, loss, and regeneration impediment to essential woody riparian vegetation. This information represents new information revealing that the Coronado National Forest's cow grazing is harming Yellow-billed Cuckoo Critical Habitat to an extent not previously considered. Reinitiation of consultation must follow.[13]

In addition, as if these two fundamental problems are not damning enough, to make matters worse, USFWS admits in its Critical Habitat Designation Notice that they failed to designate all areas with the geographical area occupied by the Yellow-billed Cuckoo:

> "We are not currently designating any areas outside the geographical area occupied by the species because the western yellow-billed cuckoo is found throughout its historical range, nor are we designating all areas within the geographical area occupied by the species."[14]

---

[9] 2021 Biological Opinion, page 189.

[10] Id., pages 181 and 189.

[11] Administration Procedures Act, 5 U.S. Code § 706(2)(A)

[12] 16 U.S.C. § 1536(a)(2).

[13] 50 CFR 402.16.

[14] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register Vol. 86, No. 75, Wednesday, April 21, 2021, page 20846.

And much of the occupied habitat that USFWS failed to designate as Critical Habitat is on the Coronado National Forest.[15]

The following image is a representative example of grazing-stunted riparian tree after the monsoons within designated Yellow-billed Cuckoo Critical Habitat not protected by an exclosure:

Image date: November 21, 2021 © Robin Silver

[15] Personal communication to Robin Silver from USFWS' employees.

On October 29, 2018, **USFWS' own species experts said** in the "Supplemental Summary of Concerns"[16] to the Coronado National Forest:

> "Grazing monitoring measures and standards do not accurately assess effects on cuckoo habitat, as well as other listed species' habitat."[17]
>
> "Management actions for cuckoos and other riparian or ephemeral drainage-dependent species: **we recommend** no spring capping (development), no development of water tanks that are likely to cause a decline in riparian habitat, **no grazing in riparian habitat (including ephemeral drainages with hackberry, oak, ash, sycamore, Arizona cypress, walnut, soapberry, etc.) where cuckoos breed at any time** …"[18]

On July 5, 2019, **USFWS' lead Yellow-billed Cuckoo species expert wrote**:

> "**We all discussed that the range grazing measures are inadequate to measure needs for sensitive/listed for wildlife**."[19]

In November 2021, **USFWS' lead Yellow-billed Cuckoo species expert reported** in "Survey Results at Five Sites on the Coronado National Forest"[20]:

> "**At all sites surveyed, young trees were lacking**, with the exception of some small, isolated pockets of saplings. The tree and shrub regeneration produced by this wet monsoon may help replenish some trees lost to drought and livestock (grazing, trampling, compacting soil, erosion, etc.) if enough moisture persists for survival and if protected from herbivory and trampling. **Given the rarity of a monsoon as wet as this year, management to protect recent woody regeneration from livestock may be especially beneficial to cuckoos and other riparian and xeroriparian dependent species**. "[21]
>
> "**At all sites surveyed, young trees were lacking**, with the exception of some small, isolated pockets of saplings. As existing trees die, younger trees must replace them to ensure continued cuckoo nesting habitat."[22]
>
> "**The tree and shrub regeneration produced by this third wettest monsoon in history may help replenish some of the trees lost by drought and livestock (grazing, trampling, compacting soil, erosion, etc.) if enough moisture persists for survival and if protected from herbivory and trampling**. These infrequent and unpredictable periods of above average rainfall are important in recruiting trees needed by cuckoos and other riparian and xeroriparian dependent species for nest sites, cover, temperature amelioration, and food production. Protecting these new trees in years when rainfall and moisture are sufficient may be one of the most productive management actions that can ensure future woodland cover. **The tree and shrub regeneration in drainage bottoms has a greater probability of survival to maturity if livestock are prevented from accessing new growth**."[23]

---

[16] Coronado National Forest (FS) Grazing Consultation Supplemental Summary of Concerns, U.S. Fish and Wildlife Service, October 29, 2018.

[17] Id., page 1.

[18] Id., page 3.

[19] Email from Sferra, Susan, to: Servoss, Jeff; RE: suggestion from Shawn [Sartorius] on grazing BO; July 5, 2019.

[20] Yellow-billed Cuckoo Protocol Survey Results at Five Sites on the Coronado National Forest, Arizona 2021, Draft, Susan Sferra, U.S. Fish and Wildlife Service, Arizona Ecological Services, November 2021.

[21] Id., page 2.

[22] Id., page 9.

[23] Ibid.

On November 11, 2021, **USFWS' lead Yellow-billed Cuckoo species expert reported** in "Grazing Impacts Input"[24]:

> "**As drought and climate change progress and livestock grazing continues, the riparian and xero-riparian shrub and tree recruitment and survival will diminish. Riparian and xero-riparian tree and shrub cover in drainage bottoms will diminish unless offsetting actions are taken**."[25]
>
> "To maintain healthy plant communities, new trees need to replace older trees that are dying at higher rates due to drought and increased temperatures. **The tree and shrub regeneration produced by this past third wettest monsoon in history may help replenish some of the trees lost by drought and livestock (grazing, trampling, compacting soil, erosion, etc.) if enough moisture persists for survival and if protected from herbivory [cow grazing] and trampling**."[26]
>
> "These infrequent and unpredictable periods of above average rainfall are important in recruiting trees needed by cuckoos and other riparian and xeroriparian dependent species for nest sites, cover, temperature amelioration, and food production. These habitats are more humid, cooler, and insect-rich than adjacent habitats. **Protecting these new trees in years when rainfall and moisture are sufficient may be one of the most productive management actions that can ensure future woodland cover. The tree and shrub regeneration in drainage bottoms has a greater probability of survival to maturity if livestock are prevented from accessing new growth** (Sferra 2021)."[27]
>
> "**Many studies document that removal of cattle grazing correlates with increases in plant productivity and abundance of breeding birds**, especially when riparian ecosystems are restored. Poessel et al. (2020)[28] is just one of the most recent studies."[29]
>
> "**A single summer of above average monsoon rain does not compensate for years of drought and livestock impacts. Reducing/eliminating livestock access to ephemeral, intermittent, and perennial drainages following these rare periods of good rainfall will allow tree and shrub seedlings to grow and survive**."[30]
>
> "**In June 2021, trees in drainage bottoms and hillsides in areas surveyed for cuckoos showed signs of stress (Sferra 2021).**[31] **… Young trees were lacking, except in isolated pockets**."[32]
>
> "**Perennial plant recruits can be killed by just a few cattle in drainage bottoms in the same season, regardless of time of year**."[33]
>
> "**Livestock congregating in shaded areas and water sources compact the soil and lead to seed germination failure**. **Replacement habitat cannot develop in these compacted areas**."[34]

---

[24] Grazing Impacts Input, Susan Sferra, November 11, 2021.

[25] Id., page 1.

[26] Id., page 1.

[27] Ibid.

[28] Poessel, S.A., J. C. Hagar, P. K. Haggerty, and T. E. Katzner. 2020. Removal of cattle grazing correlates with increases in vegetation productivity and in abundance of imperiled breeding birds. Biological Conservation 241 (2020) 108378: 1-9. www.elsevier.com/locate/biocon.

[29] Grazing Impacts Input, Susan Sferra, November 11, 2021, page 1.

[30] Id., page 2.

[31] Sferra, S.J. 2021. Yellow-billed cuckoo protocol survey results at five sites on the Coronado National Forest, Arizona, 2021. U.S. Fish and Wildlife Service. Arizona Ecological Services Office. Tucson, AZ.

[32] Grazing Impacts Input, Susan Sferra, November 11, 2021, page 2.

[33] Id., page 2.

[34] Ibid.

"**Livestock grazing and climate change both contribute toward reduced overstory and subcanopy cover** and/or conversion to more arid adapted tree species in ephemeral, intermittent, and perennial drainages. **We cannot control climate change, but we can control livestock impacts from grazing, trampling, erosion, and soil compaction**."[35]

"**Utilization rates for grazing often exceed standards for healthy ecosystems and should be adjusted**."[36]

But USFWS administrators ignored their species experts in the 2021 Biological Opinion as did they ignore that their species experts' opinion is consistent with the "best scientific data available,"[37] which recognizes that cow grazing exacerbates the effects of climate change.[38]

For Chiricahua Leopard Frog on the Coronado, designated riparian Critical Habitat is similarly left unprotected from destructive grazing. The 2021 Biological Opinion bases its Incidental Take Statement purely on a "stockpond management plan" that does not protect Chiricahua Leopard Frog riparian Critical Habitat. Designated riparian Critical Habitat for Chiricahua Leopard Frog, similar to that for Yellow-billed Cuckoo, is inadequately protected with non-applicable cow utilization metrics instead of exclosures.

USFWS' own Chiricahua Leopard Frog Recovery Plan states,

"In natural, self-sustaining habitats, the Chiricahua leopard frog depends on functioning aquatic and riparian ecosystems."[39]

Even in the area where designated Critical Habitat is focused on stockponds, USFWS' Listing and Critical Habitat rule states,

"…designated critical habitat extends upstream from ponds from the extent of the boundary for 328 ft (100 m) from the high water line. The designated critical habitat extends to 328 ft (100 m) upstream because there is often a riparian drainage coming into the tank, and Chiricahua leopard frogs are likely moving along those drainages.[40]

There cannot be Chiricahua Leopard Frog recovery without protected riparian Critical Habitat.

For Northern Mexican Gartersnake, the 2021 Biological Opinion states, "we use measurable effects to its prey base…as a surrogate for the amount and effect of take of the northern Mexican gartersnake…Therefore, take of northern Mexican gartersnakes will be considered exceeded for the Gila Topminnow, Chiricahua leopard frog, or Sonoran tiger salamander…"[41]

---

[35] Id., page 3.

[36] Ibid.

[37] 16 U.S.C. § 1533(b)(2).

[38] Adapting to Climate Change on Western Public Lands: Addressing the Ecological Effects of Domestic, Wild and Feral Ungulates; Robert L. Beschta, Debra L. Donahue, Dominick A. DellaSala, Jonathan J. Rhodes, James R. Karr, Mary H. O'Brien, Thomas L. Fleischner, and Cindy Deacon Williams, Environmental Management (2013) 51:474-491.; Livestock Production, Climate Change, and Human Health: Closing the Awareness Gap, Debra L. Donahue, Environmental Law Reporter, 45 ELR 11112, 12-2015, http://ssrn.com/abstract=2696741; citing: *See, e.g.*, Beschta et al., *supra* note 59, at 476-81; Ripple et al., *supra* note 2, at 2, 3. Almost nothing is known, however, about the ability of shrublands to sequester carbon. *See* Jack A. Morgan et al., *Carbon Sequestration in Agricultural Lands of the United States*, 65 J. Soil & Water Conservation 6A, 7A (2010), doi:10.2489/jswc.65.1.6A. This is a "critical research need," *see id.*, particularly since shrubs dominate large areas of the public lands.; Climate change scenarios of herbaceous production along an aridity gradient: vulnerability increases with aridity, Carly Golodets, Marcelo Sternberg, Jaime Kiegel, Bertrand Boeken, Azlmen Henkin, No'am G. Silgmean and Eugene D. Ungar, DOI 10.1007/s00442-015-3234-5, February 7, 2015.; Grazing Impacts Input, Susan Sferra, November 11, 2021.

[39] Chiricahua Leopard Frog (*Rana chiricahuensis*) Final Recovery Plan, U.S. Fish and Wildlife Service, April 2007, page 73.

[40] Listing and Designation of Critical Habitat for the Chiricahua Leopard Frog, Federal Register Volume 70, Number 54, USFWS, March 12, 2012, page 16348.

[41] 2021 Biological Opinion, page 142.

This scheme is effectively a shell game with no protection for designated riparian Critical Habitat essential for Recovery in spite of the fact that USFWS states in the April 28, 2021, Critical Habitat rule:

> "In the revised proposed critical habitat rule (85 FR 23608; April 28, 2020), we explained that although northern Mexican gartersnakes have been found in a variety of vegetation types within the riparian zone (*i.e.*, grasses, shrubs, and wetland plants), the underlying characteristic of this habitat needed by the gartersnake appears to be dense vegetation or other natural structural components that provide cover for the species."[42]
>
> "As explained in the revised proposed critical habitat rule (85 FR 23608; April 28, 2020), terrestrial habitat adjacent to the stream channel that includes riparian vegetation, small mammal burrows, boulder fields, rock crevices, and downed woody debris provides areas for thermoregulation, shelter, foraging opportunities, brumation, and protection from predators."[43]
>
> "In the revised proposed critical habitat rule (85 FR 23608; April 28, 2020) and this final rule, critical habitat includes occupied streams or stream reaches within the historical range with survey records of the northern Mexican gartersnake dated from 1998 to 2019 that have retained the necessary PBFs [physical or biological features] that will allow for the maintenance and expansion of existing populations. We placed outer boundaries on the portion of a stream that is considered occupied. We identified the most upstream and downstream records of the northern Mexican gartersnake along each continuous stream reach determined by presence of PBFs, and we extended the stream reach to include a dispersal distance of 2.2 mi (3.6 km). After identifying the stream reaches that meet the above parameters, we then connected those reaches with areas between that have the PBFs. We consider these areas between survey records occupied because the species occurs upstream and downstream and multiple PBFs are present that allow the species to move through these stream reaches.[44]
>
> "*Summary of Essential Physical or Biological Features* … We have determined that the following physical or biological features are essential to the conservation of the northern Mexican gartersnake:
>
> 1. Perennial or spatially intermittent streams that provide both aquatic and terrestrial habitat that allows for immigration, emigration, and maintenance of population connectivity of northern Mexican gartersnakes and contain:
>
> (A) Slow-moving water (walking speed) with in-stream pools, off-channel pools, and backwater habitat;
>
> (B) Organic and natural inorganic structural features (*e.g.*, boulders, dense aquatic and wetland vegetation, leaf litter, logs, and debris jams) within the stream channel for thermoregulation, shelter, foraging opportunities, and protection from predators;
>
> (C) Terrestrial habitat adjacent to the stream channel that includes riparian vegetation, small mammal burrows, boulder fields, rock crevices, and downed woody debris for thermoregulation, shelter, foraging opportunities, brumation, and protection from predators"[45] …
>
> In summary, for areas within the geographic area occupied by the species at the time of listing, we delineated critical habitat unit boundaries using the following criteria: … We identified and included the

[42] Designation of Critical Habitat for the Northern Mexican Gartersnake, Final Rule, 86 FR 22518, USFWS, April 28, 2021, page 22528.

[43] Id., page 22529.

[44] Ibid.

[45] Id., page 22536.

> wetland and riparian area adjacent to streams, springs, cienegas, and ponds to capture the wetland and riparian habitat needed by the species for thermoregulation, foraging, and protection from predators."[46]

Take for Chiricahua Leopard Frog does not protect Northern Mexican Gartersnake because the 2021 Biological Opinion's Chiricahua Leopard Frog "protection" is reliant purely on the "stockpond management plan,"[47] leaving designated riparian Critical Habitat inadequately protected with non-applicable cow utilization metrics instead of exclosures.

Gila Topminnow does not have designated Critical Habitat.[48] The 2021 Biological Opinion states that, "[t]ake will be considered to have been exceeded if the following conditions occur: a. Livestock grazing occurs within a pasture containing occupied habitat resulting in use measured at a level higher than authorized for that specific pasture in any two of three subsequent monitoring events. Forage utilization will be measured and analyzed in accordance with Forest Service policy as described in the proposed action."[49]

In other words, just like with Yellow-billed Cuckoo designated Critical Habitat, pastures containing occupied Gila Topminnow streams are inadequately protected by the same scheme of non-applicable cow utilization metrics instead of exclosures. Hence the shell game where Northern Mexican Gartersnake designated Critical Habitat is left inadequately protected by Gila Topminnow pastures that are in turn inadequately protected by non-applicable cow utilization metrics instead of exclosures.

Sonora Tiger Salamander does not have designated Critical Habitat.[50]

The 2021 Biological Opinion concludes that the "likelihood of aquatic populations being eliminated or individual salamanders being taken is reduced by the Stockpond Management Plan…"[51] This conclusion fails to recognize "[n]ew information on the species' biology and life history…relevant to Sonora tiger salamander biology" from USFWS own Sonora Tiger Salamander 5-Year Review[52] where:

> "Pitman (2005) excavated burrows and found tiger salamanders at a mean distance of 356 m, but as far away as 510 m, from the nearest breeding pond in gopher burrows, riprap, and in rocks associated with gopher burrows. He suggests upland habitats should be protected and managed for healthy small mammal populations within 500 m of breeding sites."[53]

Consequently, protection of Sonora Tiger Salamander based purely on a "stockpond management plan"[54] which not only affords the salamander itself inadequate protection but again, as part of the 2021 Biological Opinion's shell game, affords no protection for designated riparian Northern Mexican Gartersnake Critical Habitat.

Northern Mexican Gartersnake are found on two allotments on the Coronado National Forest, Lone Mountain and Post Canyon on the Sierra Vista Ranger District.

The Coronado National Forest's 27 allotments surveyed to date where we have documented inadequate protection of designated riparian Critical Habitat include Clanton/Cloverdale, Geronimo, and Peloncillo allotments on the Douglas Ranger District; Bear Valley, Box Canyon, Cross S, Greaterville, Lake, Montana, Oak Tree and

---

[46] Id., pages 22538-9.

[47] 2021 Biological Opinion, pages 98 and 99.

[48] General Species Information for Gila Topminnow (*Poeciliopsis occidentalis occidentalis*), USFWS, May 2008.

[49] 2021 Biological Opinion, page 62.

[50] General Species Information for Sonora Tiger Salamander (*Ambystoma tigrinum stebbinsi*), USFWS, January 6, 1997.

[51] 2021 Biological Opinion, page 115.

[52] Sonora Tiger Salamander (*Ambystoma tigrinum stebbinsi*) 5-Year Review: Summary and Evaluation, USFWS Arizona Ecological Services Field Office, October 4, 2007.

[53] Id., page 7, citing Pitman, B.T. 2005. Observations of upland habitat use by California tiger salamanders based on burrow excavations. Transactions of the Western Section of the Wildlife Society 41:26-30, page 7.

[54] 2021 Biological Opinion, page 116.

Rosemont allotments on the Nogales Ranger District; Deer Creek on the Safford Ranger District; Agua Caliente, Alisos, Duquesne, Farrel, Harshaw, Hayfield, Lewis, Lone Mountain, Lyle Canyon, McBeth, McFarland, Post Canyon, Proctor, San Rafael and Santa Cruz allotments on the Sierra Vista Ranger District.

To summarize our concerns:

1. The 2021 Biological Opinion is inadequate and illegal because:

    a. The 2021 Biological Opinion allows designated riparian Critical Habitat on the Coronado National Forest to be managed by a disingenuous and ineffective scheme that provides few riparian exclosures and instead uses cow grazing utilization metrics that do not protect riparian dependent endangered species;[55]

    b. The 2021 Biological Opinion's Incidental Take Statement for Chiricahua Leopard Frog is not related to the Coronado National Forest's cow grazing action, especially with ongoing frog augmentation. In addition, no protection is provided for Chiricahua Leopard Frog designated riparian Critical Habitat essential for long term survival and recovery;

    c. The 2021 Biological Opinion's Incidental Take Statement for Northern Mexican Gartersnake is not related to the Coronado National Forest's cow grazing action as the 2021 Biological Opinion utilizes inadequately protected and non-representative selective prey species as proxies for Take while failing to protect designated riparian Critical Habitat; and,

    d. The 2021 Biological Opinion failed to include and consider the additive and cumulative impacts of riparian cow grazing and climate change in spite of USFWS' own staff concerns,[56] USFWS' own recent conclusion in another Coronado National Forest Biological Opinion that "[w]e also anticipate that climate change will degrade habitat to the point of being incapable of supporting the occurrence of yellow-billed cuckoos,"[57] and the extensive body of scientific literature that exists regarding climate change and cow grazing impacts.[58]

2. Reinitiation of consultation must take place expeditiously based on the facts above as well as that:

    a. the new information presented prior to and in this Notice documents effects of the Coronado National Forest's cow grazing that are affecting listed species and designated riparian Critical Habitat in a manner and to an extent not considered in the 2021 Biological Opinion; and,

    b. the new information presented prior to and in this Notice documents that cow grazing on the Coronado National Forest has been and continues to be modified in a manner that is causing an

---

[55] Email from Sferra, Susan, to: Servoss, Jeff; RE: suggestion from Shawn [Sartorius] on grazing BO; July 5, 2019.; Yellow-billed Cuckoo Protocol Survey Results at Five Sites on the Coronado National Forest, Arizona 2021, Draft, Susan Sferra, U.S. Fish and Wildlife Service, Arizona Ecological Services, November 2021.; Grazing Impacts Input, Susan Sferra, November 11, 2021.; And the documentation provided in this Notice.

[56] Grazing Impacts Input, Susan Sferra, November 11, 2021.

[57] April 28, 2016, Amended Final Reinitiated Biological and Conference Opinion for the Rosemont Copper Mine, Pima County, Arizona p. 242.

[58] For example: Chiricahua Leopard Frog (*Rana chiricahuensis*) Final Recovery Plan, U.S. Fish and Wildlife Service, April 2007.; Adapting to Climate Change on Western Public Lands: Addressing the Ecological Effects of Domestic, Wild and Feral Ungulates; Robert L. Beschta, Debra L. Donahue, Dominick A. DellaSala, Jonathan J. Rhodes, James R. Karr, Mary H. O'Brien, Thomas L. Fleischner, and Cindy Deacon Williams, Environmental Management (2013) 51:474-491.; Determination of Threatened Status for the Western Distinct Population Segment of the Yellow-billed Cuckoo (*Coccyzus americanus*), Federal Register, Vol. 79, No. 192, Page 59992, October 3, 2014.; Livestock Production, Climate Change, and Human Health: Closing the Awareness Gap, Debra L. Donahue, Environmental Law Reporter, 45 ELR 11112, 12-2015, http://ssrn.com/abstract=2696741; citing: *See, e.g.*, Beschta et al., *supra* note 59, at 476-81; Ripple et al., *supra* note 2, at 2, 3. Almost nothing is known, however, about the ability of shrublands to sequester carbon. *See* Jack A. Morgan et al., *Carbon Sequestration in Agricultural Lands of the United States*, 65 J. Soil & Water Conservation 6A, 7A (2010), doi:10.2489/jswc.65.1.6A. This is a "critical research need," *see id.*, particularly since shrubs dominate large areas of the public lands.; Climate change scenarios of herbaceous production along an aridity gradient: vulnerability increases with aridity, Carly Golodets, Marcelo Sternberg, Jaime Kiegel, Bertrand Boeken, Azlmen Henkin, No'am G. Silgmean and Eugene D. Ungar, DOI 10.1007/s00442-015-3234-5, February 7, 2015.; Riparian vegetation of ephemeral streams, Stromberg, J.C., Setaro, D.L., Gallo, E.L., Lohse, K.A. and Meixner, T., *Journal of Arid Environments*, *138*, 2017, pages 27-37.

effect to listed species and their Critical Habitat that was not considered in the 2021 Biological Opinion.[59]

3. Destructive cow grazing in designated riparian Critical Habitat on the Coronado National Forest continues currently. This destructive cow grazing must cease during the new consultation to prevent the Coronado National Forest from further jeopardizing Yellow-billed Cuckoo, Chiricahua Leopard Frog and Northern Mexican Gartersnake and further destruction of their designated riparian Critical Habitat.; and,

4. The Forest Service's reliance on the 2021 Biological Opinion in allowing continued cow grazing on the Coronado National Forest's designated riparian Critical Habitat on the 27 allotments[60] noted in this Notice is not legal. The Forest Service must ensure its own compliance with the Endangered Species Act as action agency "cannot abrogate its responsibility to ensure that its actions will not jeopardize a listed species" merely by relying upon a Biological Opinion issued by USFWS.[61]

In our recent successful legal challenges against the Apache-Sitgreaves,[62] Coconino,[63] Gila,[64] Prescott[65] and Tonto[66] National Forests, the primary problem has been Forest Service employees' failure to respect, maintain and monitor Critical Habitat riparian exclosures resulting in widespread adverse modification of designated Critical Habitat.

On the Coronado National Forest, however, the situation is similar but much more sinister.

Widespread adverse destruction of designated riparian Critical Habitat is being promoted and perpetuated by the Coronado National Forest's management scheme that, instead of providing riparian cow exclosures like other Forests throughout the Region, uses cow grazing utilization metrics to govern riparian habitat conditions that do not protect riparian dependent endangered species.

And to make matters worse, USFWS administrators rubberstamped this scheme in the 2021 Biological Opinion, in spite of concerns raised by their own species subject experts, and in spite of USFWS' legal obligation to utilize "the best scientific . . . data available."[67]

The Coronado National Forest's scheme of avoiding protection of designated riparian Critical Habitat by using non-applicable cow utilization metrics instead of exclosures must end to assure Yellow-billed Cuckoo, Chiricahua Leopard Frog and Northern Mexican Gartersnake survival, much less their recovery.

---

[59] 50 C.F.R. § 402.16(a).

[60] Clanton/Cloverdale, Geronimo, and Peloncillo allotments on the Douglas Ranger District; Bear Valley, Box Canyon, Cross S, Greaterville, Lake, Montana, Oak Tree and Rosemont allotments on the Nogales Ranger District; Deer Creek on the Safford Ranger District; Agua Caliente, Alisos, Duquesne, Farrel, Harshaw, Hayfield, Lewis, Lone Mountain, Lyle Canyon, McBeth, McFarland, Post Canyon, Proctor, San Rafael and Santa Cruz allotments on the Sierra Vista Ranger District.

[61] *Pyramid Lake Paiute Tribe v. U.S. Dep't of Navy*, 898 F.2d 1410, 1415 (9th Cir. 1990).

[62] Sixty-Day Notice of Endangered Species Act Violations, Apache-Sitgreaves National Forest, CBD, June 27, 2019, http://forestpolicypub.com/wp-content/uploads/2019/07/000007_Center-for-Bio-Div-re-ESA-re-Jumping-Mouse_Region-3.pdf.; Sixty-day Notice of Endangered Species Act Violations, Upper Gila River Watershed, CBD, July 17, 2019, https://www.biologicaldiversity.org/programs/public_lands/grazing/pdfs/Upper-Gila-USFS-grazing-allotments-NOI-2019_07_17.pdf.

[63] Sixty-Day Notice of Endangered Species Act Violations, Verde River Drainage, CBD, March 16, 2020, https://www.biologicaldiversity.org/programs/public_lands/rivers/pdfs/NOI-20200316-Verde-River.pdf.;

[64] Sixty-day Notice of Endangered Species Act Violations, Upper Gila River Watershed, CBD, July 17, 2019, https://www.biologicaldiversity.org/programs/public_lands/grazing/pdfs/Upper-Gila-USFS-grazing-allotments-NOI-2019_07_17.pdf.

[65] Sixty-Day Notice of Endangered Species Act Violations, Verde River Drainage, CBD, March 16, 2020, https://www.biologicaldiversity.org/programs/public_lands/rivers/pdfs/NOI-20200316-Verde-River.pdf.;

[66] Sixty-Day Notice of Endangered Species Act Violations, Verde River Drainage, CBD, March 16, 2020, https://www.biologicaldiversity.org/programs/public_lands/rivers/pdfs/NOI-20200316-Verde-River.pdf.;

[67] 16 U.S.C. § 1536(a)(2).

Only complete exclusion of cows from the Coronado National Forest's designated riparian Critical Habitat can rehabilitate and truly protect these fragile areas.[68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82]

The Center for Biological Diversity ("Center") is a non-profit, public interest, conservation organization with more than 1.7 million members and online activists dedicated to the protection of endangered species and wild places and to the fulfillment of the continuing educational goals of our membership and the general public in the process.

Maricopa Audubon Society is a nonprofit organization with over 3,000 members dedicated to the study and enjoyment of birds and other wildlife, and to the protection and restoration of their habitat in the Southwest. Maricopa Audubon is run by volunteers and strives to protect and restore wildlife habitat through education and community involvement. Maricopa Audubon has worked to protect wetlands in Arizona since July 1953.

In 60 days, if Coronado National Forest and USFWS refuse to reevaluate via reinitiation of consultation their inappropriate and illegal reliance on a grazing management scheme based on no riparian exclosures and the use of cow grazing utilization metrics that do not protect riparian dependent endangered species to govern habitat conditions, we intend to seek judicial relief.

---

[68] Meehan, W.R. and Platts, W.S., 1978. Livestock grazing and the aquatic environment. *Journal of Soil and Water Conservation*, *33*(6), pp.274-278.

[69] Platts, W.S. and Wagstaff, F.J., 1984. Fencing to control livestock grazing on riparian habitats along streams: is it a viable alternative?. *North American Journal of Fisheries Management*, *4*(3), pp.266-272.

[70] Platts, W.S., 1981. *Influence of forest and rangeland management on anadromous fish habitat in Western North America: effects of livestock grazing* (Vol. 7). US Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station.

[71] Szaro, R.C. and Pase, C.P., 1983. Short-term changes in a cottonwood-ash-willow association on a grazed and an ungrazed portion of Little Ash Creek in central Arizona Populus fremontii, velvet ash, Fraxinus velutina, Goodding willow, Salix gooddingii. *Rangeland Ecology & Management/Journal of Range Management Archives*, *36*(3), pp.382-384.

[72] Szaro, R.C., Belfit, S.C., Aitkin, J.K. and Rinne, J.N., 1985. Impact of grazing on a riparian gartersnake. *Johnson, RR technical coordinator. Riparian Ecosystems and Their Management: Reconciling Conflicting Uses. United States Forest Service, General Technical Report RM-120*, pp.359-363.

[73] Amended Final Reinitiated Biological and Conference Opinion for the Rosemont Copper Mine, Pima County, Arizona, April 28, 2016, p. 235.

[74] Response of breeding birds to the removal of cattle on the San Pedro River, Arizona, Krueper, D. J., J. L. Bart, and T. D. Rich. 2003. Conservation Biology 17(2): 607-615.

[75] Stromberg, J.C., 1993. Fremont cottonwood-Goodding willow riparian forests: a review of their ecology, threats, and recovery potential. Journal of the Arizona-Nevada Academy of Science, pp.97-110.

[76] Rucks, M.G., 1984. Composition and trend of riparian vegetation on five perennial streams in southeastern Arizona. In California Riparian Systems (pp. 97-108). University of California Press.

[77] Smith, J.J., 1990. Recovery Of Riparian Vegetation on An Intermittent Stream Following Removal of Cattle. In California Riparian Systems Conference, p. 217.

[78] Cannon, R.W. and Knopf, F.L., 1984. Species composition of a willow community relative to seasonal grazing histories in Colorado. *The Southwestern Naturalist*, *29*(2), pp.234-237.

[79] Klebenow, D.A. and Oakleaf, R.J., 1984. Historical avifaunal changes in the riparian zone of the Truckee River.

[80] Taylor, D. M., and C. D. Littlefield. 1986. Willow flycatcher and yellow warbler response to cattle grazing. American Birds 40:1169-1173.

[81] Amended Final Reinitiated Biological and Conference Opinion for the Rosemont Copper Mine, Pima County, Arizona, USFWS, April 28, 2016, pages 235 and 248.

[82] Poessel, S.A., J. C. Hagar, P. K. Haggerty, and T. E. Katzner. 2020. Removal of cattle grazing correlates with increases in vegetation productivity and in abundance of imperiled breeding birds. Biological Conservation 241 (2020) 108378: 1-9. www.elsevier.com/locate/biocon.

DOCUMENT STRUCTURE

GENERAL BACKGROUND

The Center's field surveys of designated Chiricahua Leopard Frog ("CLF") Critical Habitat were conducted from Aug. 6 through Nov. 5, 2020. The Center's field surveys of designated Yellow-billed Cuckoo Critical Habitat were conducted from April 22 through June 7, 2021. Our professional field biologists documented livestock grazing impacts to standing waters, riparian vegetation, soils, and streambanks and examined condition of cattle exclosure fencing. Stream reaches were ranked with absent, light, moderate or significant grazing impacts. We surveyed dozens of miles of designated Critical Habitat on the Coronado National Forest.

The CLF was listed as threatened under the Endangered Species Act ("ESA") in 2002.[83] A review of range-wide Chiricahua leopard frog population trends has not been conducted since 2011.[84]

Since the development of the CLF Recovery Plan in 2007[85] and designation of Critical Habitat in 2012,[86] the USFWS and the Forest Service continue greenlighting cattle grazing plans and continue allowing cattle grazing that is causing the destruction of designated riparian Critical Habitat, is diminishing the likelihood of CLF survival and

[83] Listing of the Chiricahua Leopard Frog (*Rana chiricahuensis*), Final rule with a special rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register, Vol. 67, No. 114, June 13, 2002, page 40790.

[84] Chiricahua Leopard Frog (*Lithobates* [=*Rana*] *chiricahuensis*); 5-Year Review: Summary and Evaluation; USFWS Arizona Ecological Services Office, Phoenix, Arizona, January 2011.

[85] Chiricahua Leopard Frog (*Rana chiricahuensis*) Final Recovery Plan, U.S. Fish and Wildlife Service, April 2007.

[86] Listing and Designation of Critical Habitat for the Chiricahua Leopard Frog, Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register, Vol. 77, No. 54, March 20, 2012, page 16324.

recovery, and is causing direct destruction of riparian Critical Habitat that is diminishing the value of Critical Habitat as a whole for the conservation of the species.

In this Notice and in the hyperlinked report, "On the Brink, How Federal Agency Neglect is Killing Chiricahua Leopard Frogs" ("Center 2020"),[87] we document that cattle impacts are significant in designated riparian CLF Critical Habitat. Nearly all riparian sites visited were damaged by cows and their feces. All were lacking streamside riparian vegetation.

A few isolated exceptions were noted in our surveys showing that it is possible to maintain, improve and recover wetland ecosystems supporting Chiricahua leopard frogs as well as a diversity of other native wildlife, if cattle are kept out of these areas.

The Western Yellow-billed Cuckoo was listed as threatened under the ESA in 2014.[88] Critical Habitat was designated on April 21, 2021.[89]

As is the case for CLF, USFWS and the Forest Service continue greenlighting cattle grazing plans and continue allowing cattle grazing that is causing the destruction of designated riparian Yellow-billed Cuckoo Critical Habitat, is diminishing the likelihood of Yellow-billed Cuckoo reproduction and recovery, and is causing direct destruction of Critical Habitat that is diminishing the value of Critical Habitat as a whole for the conservation of Yellow-billed Cuckoo.

In this Notice, we document that cattle have significantly impacted designated riparian Yellow-billed Cuckoo Critical Habitat. The damage that we have identified is acute and chronic. Cattle are grazing, trampling and defecating in riparian areas that Yellow-billed Cuckoo depend on for their reproduction. Nearly all sites visited were damaged by cows and their feces. Critical woody streamside vegetation has been significantly impacted with very little, if any, regeneration observed. Many riparian ecosystems surveyed were so significantly impacted by cattle that their function as designated Yellow-billed Cuckoo critical foraging and breeding habitat is diminished.

Yellow-billed Cuckoo migrate to AZ to reproduce during the summer months and require habitat with dense layers of vegetation in both the subcanopy and ground layers as well as perennial surface water.[90] Food availability for nesting Yellow-billed Cuckoo is influenced by the density and species composition of understory and overstory vegetation that supports required insect prey for nesting adults and chicks.[91] Cattle grazing has eliminated these habitat characteristics that USFWS describes as essential to Yellow-billed Cuckoo nesting and conservation and recovery. Our surveys demonstrate damage to water and riparian vegetation from livestock grazing in designated Critical Habitat. The widespread adverse impacts caused by cattle grazing that we observed and documented occurs as the result of Forest Service personnel's callous disregard for the protection of Public Lands, of rare wetland habitat, and of endangered species protection laws.

The law prohibits any action that reduces "appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species."[92] The law also

---

[87] On the Brink, How Federal Agency Neglect is Killing Chiricahua Leopard Frogs, Chris Bugbee, Center for Biological Diversity, December 2020.

[88] Rules and Regulations. Determination of Threatened Status for the Western Distinct Population Segment of the Yellow-billed Cuckoo (*Coccyzus americanus*), Federal Register, Vol. 79, No. 192. October 3, 2014

[89] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo, Final Rule, U.S. Fish and Wildlife Service, Federal Register, Vol. 86, No. 75, April 21, 2021, page 20798.

[90] Rosenberg, K.V., R.D. Ohmart, W.C. Hunter, and B.W. Anderson. 1991. Birds of the Lower Colorado River Valley. Univ. Arizona Press, Tucson, AZ. 416pp.; Johnson, M.J., S.L. Durst, C.M. Calvo, L. Stewart, M.K. Sogge, G. Bland, and T. Arundel. 2008. Yellow-billed Cuckoo Distribution, Abundance, and Habitat Use Along the Lower Colorado River and its Tributaries, 2007 Annual Report. USGS, Open File Report 2008-1177. 274pp.

[91] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Proposed Rules, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register, Vol. 79, No. 158, August 15, 2014, page 48551.

[92] 50 CFR § 402.02; 16 U.S.C. 1531 *et seq*.

prohibits any action causing "direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species."[93]

This Notice provides new information that the Forest Service authorized cattle grazing has been dramatically modified in a manner that is causing effects to Yellow-billed Cuckoo and designated Critical Habitat that was not considered in the 2021 Biological Opinion.

When such new information becomes available, or when take has been exceeded, agencies, such as the Forest Service and USFWS, who fail to reinitiate consultation violate 16 U.S.C. § 1536(a)(2) and 50 C.F.R. § 402.14. Besides violating the ESA, such a scheme also violates the Administrative Procedure Act requirement that federal decisions are not "arbitrary, capricious, or an abuse of discretion."[94]

For CLF on the Coronado National Forest, the 15 allotments at issue are Clanton/Cloverdale, Geronimo, and Peloncillo (formerly Walnut or Walnut Canyon) on the Douglas Ranger District; Bear Valley, Cross S, Greaterville, and Oak Tree on the Nogales Ranger District.

The Western Yellow-billed Cuckoo ("Yellow-billed Cuckoo") was listed as threatened under the Endangered Species Act ("ESA") in 2014.[95] Critical Habitat was designated on April 21, 2021.[96]

As is the case for CLF, USFWS and the Forest Service continue greenlighting cattle grazing plans and continue allowing cattle grazing that is causing the destruction of designated Yellow-billed Cuckoo Critical Habitat, is diminishing the likelihood of Yellow-billed Cuckoo reproduction and recovery and is causing direct destruction of Critical Habitat that is diminishing the value of Critical Habitat as a whole for the conservation of Yellow-billed Cuckoo.

The Center's field surveys of designated Yellow-billed Cuckoo Critical Habitat were conducted from April 22 through June 7, 2021. Our professional field biologists documented livestock grazing impacts to standing waters, riparian vegetation, soils, and streambanks and examined condition of cattle exclosure fencing. Stream reaches were ranked with absent, light, moderate or significant grazing impacts. We surveyed dozens of miles of designated Critical Habitat.

This Notice provides new information that (1) the effects of agency actions are affecting Yellow-billed Cuckoo and its designated Critical Habitat in a manner and to an extent not considered in the 2021 Biological Opinion and (2) that the Forest Service authorized cattle grazing has been dramatically modified in a manner that is causing effects to Yellow-billed Cuckoo and designated Critical Habitat that was not considered in the 2021 Biological Opinions.

The 2021 Biological Opinions needs to be initiated that meaningfully incorporate the information presented in this Notice. When such new information becomes available, or when take has been exceeded, agencies, such as the Forest Service and USFWS, who fail to reinitiate consultation violate 16 U.S.C. § 1536(a)(2) and 50 C.F.R. § 402.14. Besides violating the ESA, such a scheme also violates the Administrative Procedure Act requirement that federal decisions are not "arbitrary, capricious, or an abuse of discretion."[97]

For Yellow-billed Cuckoo, the 20 allotments at issue are the Greaterville, Bear Valley, Montana, Lake, Box Canyon, and Rosemont allotments on the Coronado National Forest Nogales Ranger District, the Lyle Canyon,

---

[93] Ibid.

[94] 5 USC §706(2)(A).

[95] Rules and Regulations. Determination of Threatened Status for the Western Distinct Population Segment of the Yellow-billed Cuckoo (*Coccyzus americanus*), Federal Register, Vol. 79, No. 192. October 3, 2014.

[96] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo, Final Rule, U.S. Fish and Wildlife Service, Federal Register, Vol. 86, No. 75, April 21, 2021, page 20798.

[97] 5 USC §706(2)(A).

Lone Mountain, McBeth, Hayfield, Duquesne, Santa Cruz, Alisos, Lewis, McFarland, Harshaw, Farrel, Proctor, and Agua Caliente allotments on the Coronado National Forest Sierra Vista Ranger District. Continued failure by the Forest Service and USFWS to reinitiate consultation on the Greaterville, Bear Valley, Montana, Lake, Box Canyon, and Rosemont allotments on the Coronado National Forest Nogales Ranger District, and the Lyle Canyon, Lone Mountain, McBeth, Hayfield, Duquesne, Santa Cruz, Alisos, Lewis, McFarland, Harshaw, Farrel, Proctor, and Agua Caliente allotments on the Coronado National Forest Sierra Vista Ranger District.[98] Reinitiation of consultation must take place.[99]

In this Notice we also document cattle damaged designated Northern Mexican Gartersnake ("NMGS") Critical Habitat. The damage that we have identified is both acute and chronic. Cattle are grazing, trampling and defecating in riparian areas that NMGS depend on for foraging, cover, and brumation.

This Notice provides new information that (1) the effects of agency actions are affecting listed gartersnakes and their designated Critical Habitat in a manner and to an extent not considered in the 2021 Biological Opinion for the two allotments at issue here, and (2) that the Forest Service authorized cattle grazing has been dramatically modified in a manner that is causing effects to NMGS and designated Critical Habitat that was not considered in the 2021 Biological Opinion.

In addition, the Incidental Take Statement for NMGS in the 2021 Biological Opinion fails to discuss NMGS Critical Habitat and the mitigation measures that will adequately address impacts to this species consistent with ESA's protective intent.[100]

We provided Center (2020) to the Forest Service and USFWS on January 6, 2021. Hopefully, now that Center (2020) is presented with this Notice, the Forest Service and USFWS will utilize the following 60 days to address and remedy the violations documented and presented in this Notice and in Center (20201). Short of the violations documented and presented in this Notice and in Center (2020) being remedied in the next 60 days, the Center for Biological Diversity and Maricopa Audubon Society intend to file suit to address these serious legal violations.

[98] 16 U.S.C. § 1536(a)(2) and 50 C.F.R. § 402.14(g).

[99] 16 U.S.C. § 1532, 50 CFR § 17.21, 16 U.S.C. § 1536(b)(4).

[100] *Center for Biological Diversity v.* BLM, 698 F.3d 1101, 1115 (9th Cir. 2012)

STATUTORY BACKGROUND

The ESA is "the most comprehensive legislation for the preservation of endangered species ever enacted by any nation."[101] The statute's primary goal is "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved."[102] The U.S. Supreme Court has recognized that "the plain intent of Congress in enacting the [ESA] was to halt and reverse the trend toward species extinction, whatever the cost."[103]

Section 4 of the ESA directs the Secretary of the Interior to designate species that are threatened or endangered with extinction, and to designate "critical habitat" for such species.[104] Section 4 also requires the Secretary to develop and implement recovery plans for the conservation and survival of threatened and endangered species, unless the Secretary finds that such a plan will not promote the conservation of the species.[105]

To receive the protection of the ESA, a species must first be listed by the Secretary of the Interior as "endangered" or "threatened."[106] After a species is listed, the substantive obligations of the ESA apply to that species. These include the prohibition on take, the duty of federal agencies to consult with USFWS, and the duty to ensure that those agencies' actions do not jeopardize the continued existence of listed species or adversely modify critical habitat.[107]

Within the ESA's statutory scheme, the designation and protection of Critical Habitat is especially important. Congress recognized the significance of habitat protection when it found that:

> "[C]lassifying a species as endangered or threatened is only the first step in insuring its survival. Of equal or more importance is the determination of the habitat necessary for that species' continued existence. . . . If the protection of endangered and threatened species depends in large measure on the preservation of the species' habitat, then the ultimate effectiveness of the Endangered Species Act will depend on the designation of critical habitat."[108]

Thus, the ESA requires USFWS to designate Critical Habitat at the same time a species is listed.[109] Any designation of Critical Habitat must be based on the "best scientific data available."[110]

Reflecting the statute's focus on species recovery, Critical Habitat may include both occupied and unoccupied areas that are "essential for the conservation of the species."[111] "Conservation," is defined in turn to include all methods that that can be employed to "bring any endangered species or threatened species to the point at which" the protection of the ESA is "no longer necessary."[112] As such, "the purpose of establishing 'critical habitat' is for the government to carve out territory that not only is necessary for the species' survival but also is essential for the species' recovery."[113]

---

[101] Tenn. Valley Auth. v. Hill, 437 U.S. 153, 180 (1978).

[102] 16 U.S.C. § 1531(b).

[103] *Hill*, 437 U.S. at 184.

[104] 16 U.S.C. § 1533(a).

[105] 16 U.S.C. § 1533(f).

[106] *See* 16 U.S.C. § 1533.

[107] *See Hill*, 437 U.S. at 180-82.

[108] H.R. Rep. No. 94-887 at 3 (1976).

[109] 16 U.S.C. §§ 1533(a)(3)(A)(i), 1533(b)(6)(C).

[110] *Id.* § 1533(b)(2).

[111] *Ibid.*

[112] *Id.* § 1532(3).

[113] *Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv.*, 378 F.3d 1059, 1070 (9th Cir. 2004).

Once a species is listed and critical habitat designated, Section 7 of the ESA requires each federal agency, in consultation with a federal wildlife agency (in this case, USFWS), to ensure that any proposed action is not likely to jeopardize the continued existence of a listed species, or result in the destruction or adverse modification of Critical Habitat.[114] To "jeopardize the continued existence of" means "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species."[115] "Destruction or adverse modification" of critical habitat means "a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation or a listed species."[116] And "conservation," as noted, means recovery to the point where the ESA's protections are no longer needed.[117] Thus, the ultimate aim of consultation is to ensure that federal agency action does not impair the survival or recovery of a listed species.

For each proposed action, the action agency must request from USFWS whether any listed or proposed species may be present in the area of the proposed action.[118] If listed or proposed species may be present, the action agency must prepare a "biological assessment" to determine whether the listed species may be affected by the proposed action.[119] If the agency determines that its proposed action may affect any listed species or critical habitat, the agency must engage in "formal consultation" with USFWS.[120]

When the "action agency" (the Forest Service in this case) determines that a proposed action may affect a listed species, it must engage in formal consultation with USFWS.[121] Formal consultation results in a biological opinion detailing "how the agency action affects the species or its critical habitat."[122]

It is essential that USFWS define the scope of formal consultation to encompass the entire proposed action.[123] The term "agency action" should be interpreted broadly because "caution can only be exercised if the agency takes a look at all the possible ramifications of the agency action."[124] USFWS is accordingly required to consider "all phases" of the agency action in its analysis.[125]

USFWS must also take a broad view of the action's impacts on listed species. Under Section 7's implementing regulations:

> "Effects of the action are *all consequences* to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. … Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action."[126]

Federal agencies must "use the best scientific and commercial data available" in assessing a proposed action's impact on a protected species.[127]

To complete formal consultation, USFWS must provide the action agency with a "biological opinion"

---

[114] 16 U.S.C. § 1536(a)(2).

[115] 50 C.F.R. § 402.02.

[116] *Ibid.*

[117] 16 U.S.C. § 1532(3).

[118] 16 U.S.C. § 1536(c)(1); 50 C.F.R. § 402.12.

[119] Ibid.

[120] 50 C.F.R. § 402.14.

[121] 50 C.F.R. § 402.02.

[122] 16 U.S.C. 1536(b)(3)(A).

[123] *Conner v. Burford*, 848 F.2d 1441, 1453 (9th Cir. 1988) (citing *North Slope Borough v. Andrus*, 642 F.2d 589, 608 (D.C. Cir. 1980)).

[124] *Ibid.*

[125] *Ibid.*

[126] 50 C.F.R. § 402.02 (emphasis added).

[127] 16 U.S.C. § 1536(a)(2).

explaining how the proposed action will affect the listed species or habitat.[128] The biological opinion "is required to address both the 'no jeopardy' and 'no adverse modification' prongs of Section 7."[129] If USFWS concludes in the biological opinion that the proposed action will jeopardize the continued existence of a listed species, or will result in the destruction or adverse modification of critical habitat, USFWS must outline "reasonable and prudent alternatives" to the proposed action that USFWS believes would not jeopardize the listed species or result in the destruction or adverse modification of its Critical Habitat.[130]

If the biological opinion concludes that the proposed action is not likely to jeopardize the continued existence of a listed species, or result in the destruction or adverse modification of critical habitat, USFWS must provide an "incidental take statement," specifying the amount or extent of such incidental taking on the species, any "reasonable and prudent measures" that USFWS considers necessary or appropriate to minimize such impact, and setting forth the "terms and conditions" that must be complied with by the agency to implement those measures.[131] In order to monitor the impacts of incidental take, the agency must report the impact of its action on the listed species to USFWS.[132] If during the course of the action the amount or extent of incidental taking is exceeded, the agency must reinitiate consultation immediately.[133]

After a species has been listed and with every action evaluated by a USFWS biological opinion where a listed species is likely to be adversely affected, it is prohibited to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect in any such conduct."[134] With a USFWS biological opinion where a listed species is likely to be adversely affected, USFWS must provide an Incidental Take Statement and Reasonable and Prudent Measures to ensure that any proposed action is not likely to jeopardize the continued existence of a listed species, or result in the destruction or adverse modification of critical habitat.[135] Incidental Take Statements provide for mitigation measures that adequately address impacts on listed species consistent with ESA's protective intent,[136] that are causally linked between the action and the take of the species,[137] and that provides for a take-triggering metric that is finite and measurable.[138]

After the procedural requirements of consultation are complete, the ultimate duty to protect and conserve listed species lies with the action agency. Consequently, an action agency's reliance on an inadequate, incomplete, or flawed biological opinion is arbitrary, capricious, and unlawful.[139]

A biological opinion is a final agency action subject to judicial review under the federal Administrative Procedure Act, which requires federal courts to set aside agency action found to be "arbitrary, capricious, an abuse

---

[128] 16 U.S.C. § 1536(b); 50 C.F.R. § 402.14.

[129] *Center for Biological Diversity v. Bureau of Land Management*, 422 F. Supp. 2d 1115, 1127 (N.D. Cal. 2006), *citing* 50 C.F.R. § 402.14(g)(4).

[130] 16 U.S.C. § 1536(b)(3)(A).

[131] 16 U.S.C. § 1536(b)(4); 50 C.F.R. § 402.14(i).

[132] 50 C.F.R. § 402.14(i)(3).

[133] 50 C.F.R. § 401.14(i)(4); *see also* 50 C.F.R. § 402.16.

[134] 16 U.S.C. § 1532, 50 CFR § 17.21, 16 U.S.C. § 1536(b)(4).

[135] 16 U.S.C. § 1536(a)(2).

[136] *Center for Biological Diversity v.* BLM, 698 F.3d 1101, 1115 (9th Cir. 2012).

[137] 50 C.F.R. 402.14(i)(1)(i); *Miccosukee Tribe of Indians of Fla. v. United States*, 566 F.3d 1257, 1275 (11th Cir. 2009).

[138] Center for Biological Diversity, et al., v. Donald H. Rumsfeld, Secretary of Defense, et al., CIV99-203 TUC ACM, *198 F. Supp. 2d 1139; 2002 U.S. Dist LEXIS 7419; 54 ERC (BNA) 1391; 32 ELR 20640*; April 8, 2002: "Mitigation measures must be reasonably specific, certain to occur, and capable of implementation; they must be subject to deadlines or otherwise-enforceable obligations; and most important, they must address the threats to the species in a way that satisfies the jeopardy and adverse modification standards."

[139] *See, e.g., Wild Fish Conservancy v. Salazar*, 628 F.3d 513, 532 (9th Cir. 2010).

of discretion, or otherwise not in accordance with the law."[140] A court's review under this standard, while "narrow," is also "searching and careful."[141]

Reinitiation of Section 7 consultation is required and shall be requested by the Federal action agency or by USFWS if (a) the amount or extent of taking specified in the incidental take statement is exceeded; (b) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (c) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or (d) if a new species is listed or critical habitat designated that may be affected by the identified action.[142]

While a consultation is taking place, Section 7(d) prohibits Federal agencies from making "any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures which would not violate subsection 7(a)(2)"[143] [insuring any action is not likely to jeopardize the continued existence of an endangered species or result in the destruction or adverse modification of Critical Habitat].

In addition to the obligation to avoid jeopardizing species under section 7(a)(2), Section 7(a)(1) of the ESA also imposes an obligation on all federal agencies, in consultation with the USFWS, to "carry out programs for the conservation" of listed species.[144] This provision imposes an "affirmative duty on each federal agency to conserve each of the species listed." *Sierra Club v. Glickman,* 156 F.3d 606,616 (5th Cir. 1998); *accord Pyramid Lake Paiute Tribe of Indians v. Dep't of the Navy,* 898 F.2d 1410, 1416-17 (9th Cir. 1990) (noting that federal agencies have "affirmative obligations to conserve under [S]ection 7(a)(1)"). "Conserve" is defined by the Act to mean *recovery, i.e.*, the "use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary."[145] We have recently reaffirmed the obligation of all federal agencies to "carry out programs for the conservation" of listed species in *Center for Biological Diversity v. Tom Vilsack,* 276 F. Supp. 3d 1015 (D.Nev. 2017).[146]

Section 7(a)(4) requires Federal agencies to confer with the Service on actions likely to jeopardize the continued existence of any species proposed for listing or result in the destruction or adverse modification of any proposed critical habitat. When new species are added to the federal list and are affected by federal actions such as grazing on Forest Service land, the law requires that the Forest Service consults with USFWS to ensure that Forest Service's activities will not jeopardize survival and recovery of these species.[147]

Section 7(d) prohibits Federal agencies from making "any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures which would not violate subsection 7(a)(2)"[148] [insuring any action is not likely to jeopardize the continued existence of an endangered species or result in the destruction or adverse modification of Critical Habitat].

Section 9 of the ESA and its implementing regulations prohibit the unauthorized "take" of any endangered or threatened species of fish or wildlife. 16 U.S.C. § 1538(a)(1); 16 U.S.C. § 1533(d); 50 C.F.R. § 17.31. "Take" is defined broadly under the ESA to include harming, harassing, trapping, capturing, wounding or killing a protected

---

[140] 5 U.S.C. § 706(2)(A); *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, 422 F.3d 782, 709 (9th Cir. 2005).

[141] *Marsh v. Oregon Natural Res. Council*, 490 U.S. 360, 378 (1989).

[142] 50 CFR § 402.16 Reinitiation of formal consultation.

[143] 16 U.S.C. § 1536(d).

[144] 16 U.S.C. § 1536(a)(1).

[145] Ibid.

[146] Order, Center for Biological Diversity, et al., Plaintiffs, v. Tom Vilsack, et al., Defendants; Case No. 2?13-cv-01785-RFB-GWH; August 1, 2017.

[147] 16 U.S.C. § 1536(a)(2) and 50 C.F.R. § 402.14(g).

[148] 16 U.S.C. § 1536(d)

species either directly or by degrading its habitat. 16 U.S.C. § 1532(19).

Section 4(f) of the ESA requires that the "Secretary shall develop and implement Recovery Plans for the conservation and survival of endangered species." 16 U.S.C. § 1533(f).

The Administrative Procedure Act requires that federal decisions are not "arbitrary, capricious, or an abuse of discretion."[149]

CHIRICAHUA LEOPARD FROG BACKGROUND AND HABITAT NEEDS

Almost half of all amphibian species worldwide are declining in abundance or distribution, and a third are immediately threatened with extinction,[150] including the Chiricahua Leopard Frog, which gained protection under the Endangered Species Act in 2002,[151] a Recovery Plan in 2007,[152] and Critical Habitat designation in 2012.[153] Like other amphibians, CLF faces ongoing threats that include disease, predation by non-native species, habitat degradation and fragmentation, environmental contamination, and climate change.[154] CLF have disappeared from more than 80% of their historical habitat in the United States as a result of extensive loss of wetland habitat.[155]

Center (2020) documents the fact that cattle have significantly damaged designated CLF Critical Habitat on four national forests in Arizona, the Apache-Sitgreaves, Coconino, Coronado, and Tonto National Forests. This damage is the result of trampling and defecating by cattle in ponds critical for CLF survival and by grazing in designated riparian Critical Habitat away from stock ponds. Center (2020) documents recent field surveys of 17 grazing allotments, where CLF were found in less than 10% of the Critical Habitat breeding ponds visited, where nearly all were degraded by cows and their feces, and where designated riparian Critical Habitat has been damaged with extensive vegetation removal and essentially no streamside woody vegetation regeneration. Many aquatic ecosystems surveyed were so badly trampled by cattle and polluted by cow manure that their function as designated Critical breeding habitat has been diminished.

Livestock grazing can cause a decline in diversity, abundance, and species composition of riparian herpetofauna communities from direct or indirect threats, including (1) declines in the structural richness of the vegetative community; (2) losses or reductions of the prey base; (3) increased aridity of habitat; (4) loss of thermal cover and protection from predators; and (5) a rise in water temperatures to levels lethal to larval stages of amphibian and fish development.[156] Livestock grazing may also lead to desertification (the process of becoming arid land or desert as a result of land mismanagement, climate change, or other extenuating circumstances) due to a loss in soil fertility from erosion and gaseous emissions spurred by a reduction in vegetative ground cover, particularly at lower elevations.[157] Specific attributes of ecosystems, such as composition, function, and structure, have been documented as being altered by livestock grazing through a variety of means, including (1) decreasing

---

[149] 5 USC §706(2)(A).

[150] Lötters, S., Kielgast, J., Bielby, J., Schmidtlein, S., Bosch, J., Veith, M., Walker, S.F., Fisher, M.C. and Rödder, D., 2009. The link between rapid enigmatic amphibian decline and the globally emerging chytrid fungus. *EcoHealth, 6*(3), pp. 358-372.

[151] Listing of the Chiricahua Leopard Frog (*Rana chiricahuensis*), Final rule with a special rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register, Vol. 67, No. 114, June 13, 2002, page 40790.

[152] Chiricahua Leopard Frog (*Rana chiricahuensis*) Final Recovery Plan, U.S. Fish and Wildlife Service, April 2007.

[153] Listing and Designation of Critical Habitat for the Chiricahua Leopard Frog, Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register, Vol. 77, No. 54, March 20, 2012, page 16324.

[154] Chiricahua Leopard Frog (*Rana chiricahuensis*) Final Recovery Plan, U.S. Fish and Wildlife Service, April 2007, page C-8.

[155] Id., page 7.

[156] Ibid.

[157] Schlesinger, W.H., Reynolds, J.F., Cunningham, G.L., Huenneke, L.F., Jarrell, W.M., Virginia, R.A. and Whitford, W.G., 1990. Biological feedbacks in global desertification. *Science*, *247*(4946), pp. 1043-1048.

the density and biomass of individual species, reducing species richness, and changing biological community organization; (2) interfering with nutrient cycling and ecological succession; and (3) changing vegetation stratification, contributing to soil erosion, and decreasing availability of water to biotic communities.[158]

Livestock grazing causes long-term changes to the watershed and its functions.[159] Livestock grazing causes soil compaction, decreased moisture infiltration rates, increased runoff, changed vegetative species composition, decreased riparian vegetation, increased erosion, increased stream sedimentation, increased stream water temperature, and changes in channel form.[160]

Water-column alterations can be caused by changes in the magnitude and timing of organic and inorganic inputs into the stream, increases in fecal contamination, changes in water temperatures due to removal of vegetation, reduction of stream shore water depth, changes in timing and magnitude of stream flow events from changes in watershed vegetative cover, and an increase in stream temperature.[161] These alterations in stream conditions can affect the food chain, including CLF and its prey base.

Cattle remove bank-line vegetation that provides escape cover for frogs and a source of insect prey. The CLF uses riparian herbaceous vegetation for cover, thermoregulation, and foraging. Litter is reduced by trampling and churning into the soil, thus reducing cover for soil, plants, and wildlife.[162] Overuse of vegetation by livestock causes changes to plant root structures, altering plant species composition and overall biomass.[163] Reduced herbaceous vegetation leads to accelerated soil loss due to increased exposure of soils to downpour events and reduced sediment filtering capabilities of the vegetation.[164] Hoof action causes loss of cryptobiotic soil crusts, soil compaction, erosion, and gullying.[165]

Possible adverse effects to CLF and its habitat as a result of livestock grazing include (1) trampling of egg masses, tadpoles, and frogs; (2) possible incidental ingestion of small larvae or eggs while drinking; (3) deterioration of watersheds; (4) degraded water quality with subsequent toxic effects on frogs; (5) elimination of undercut banks that provide cover for frogs; (6) loss of cover provided by wetland and riparian vegetation; (7) loss of deep backwater pools; (8) spread of disease; and (9) facilitation of the dispersal of non-native predators.[166]

---

[158] Fleischner, T.L., 1994. Ecological costs of livestock grazing in western North America. *Conservation biology*, *8*(3), pp. 629-644.

[159] Armour, C., Duff, D. and Elmore, W., 1994. The effects of livestock grazing on western riparian and stream ecosystem. *Fisheries*, *19*(9), pp. 9-12.; Belsky, A.J., Matzke, A. and Uselman, S., 1999. Survey of livestock influences on stream and riparian ecosystems in the western United States. *Journal of Soil and water Conservation*, *54*(1), pp. 419-431.; Fleischner, T.L., 1994. Ecological costs of livestock grazing in western North America. *Conservation biology*, *8*(3), pp. 629-644.; Poff, B., Koestner, K.A., Neary, D.G. and Henderson, V., 2011. Threats to riparian ecosystems in Western North America: an analysis of existing literature 1. *JAWRA Journal of the American Water Resources Association*, *47*(6), pp. 1241-1254.

[160] Schulz, T. T., & Leininger, W. C. (1990). Differences in riparian vegetation structure between grazed areas and exclosures. Journal of Range Management, 43(4), 295-299.; Fleischner, T.L., 1994. Ecological costs of livestock grazing in western North America. *Conservation biology*, *8*(3), pp. 629-644.; Ohmart, R.D., 1996. Ecological condition of the East Fork of the Gila River and selected tributaries: Gila National Forest, New Mexico. *General Technical Report RM.*, *272*, p. 312.

[161] Platts, W.S., 1990. Managing fisheries and wildlife on rangelands grazed by livestock: a guidance and reference document for biologists.; Fleischner, T.L., 1994. Ecological costs of livestock grazing in western North America. *Conservation biology*, *8*(3), pp.629-644.

[162] Schulz, T. T., & Leininger, W. C. (1990). Differences in riparian vegetation structure between grazed areas and exclosures. Journal of Range Management, 43(4), 295-299.

[163] Vallentine, J. F. 1990. Grazing management. San Diego, CA, USA: Academic Press. 533 pp.; Popolizio, C.A., Goetz, H. and Chapman, P.L., 1994. Short-term response of riparian vegetation to 4 grazing treatments. *Rangeland Ecology & Management/Journal of Range Management Archives*, *47*(1), pp. 48-53.

[164] Erman et al. 1977, Osborne, L.L. and Kovacic, D.A., 1993. Riparian vegetated buffer strips in water-quality restoration and stream management. *Freshwater biology*, *29*(2), pp. 243-258.

[165] Harper, K.T. and Marble, J.R., 1988. A role for nonvascular plants in management of arid and semiarid rangelands. In *Vegetation science applications for rangeland analysis and management* (pp. 135-169).; Springer, Dordrecht., Orodho, A.B., Trlica, M.J. and Bonham, C.D., 1990. Long-term heavy-grazing effects on soil and vegetation in the four corners region. *The Southwestern Naturalist*, pp.9-14.; Schlesinger, W.H., Reynolds, J.F., Cunningham, G.L., Huenneke, L.F., Jarrell, W.M., Virginia, R.A. and Whitford, W.G., 1990. Biological feedbacks in global desertification. *Science*, *247*(4946), pp. 1043-1048.; Bahre, C.J., 1991. *A legacy of change: historic human impact on vegetation in the Arizona borderlands*. University of Arizona Press.

[166] Hendrickson, D.A. and Minckley, W.L., 1985. Cienegas-vanishing climax communities of the American Southwest. *TNHC-Publications*.; Jancovich, J.K., Davidson, E.W., Morado, J.F., Jacobs, B.L. and Collins, J.P., 1997. Isolation of a lethal virus from the endangered tiger salamander Ambystoma

Indirect adverse effects occur through a variety of means during the year even when CLF are inactive (e.g., between November and February). Increased erosion in the watershed caused by livestock grazing accelerates sedimentation of deep pools used by frogs.[167] Sediment alters primary productivity and fills interstitial spaces in streambed materials with fine particulates that impede water flow, reduce oxygen levels, and restrict waste removal.[168] CLF are also adversely affected by degraded water quality and subsequent toxic effects caused by cattle urine and feces. For example, at Headquarters Windmill Tank on the Coronado National Forest in the Chiricahua Mountains in southeastern Arizona, Sredl et al. (1997) documented cattle impacts at a stock tank that resulted in degraded water quality, including elevated hydrogen sulfide concentrations.[169] A die-off of CLFs at the site was attributed to cattle-associated water quality problems and, as a result, the species has been extirpated from the site.[170] Larval frogs are particularly susceptible to nitrogenous compounds that can be associated with grazing.[171] Toxicity results from high concentrations of un-ionized ammonia, particularly in combination with primary-production induced elevation in pH.[172]

Disruption of metapopulation dynamics is likely an important factor in the regional loss of populations.[173] CLF populations are often small, and their habitats are dynamic, resulting in a relatively low probability of long-term population persistence. Historically, populations were more numerous and closer together. If populations winked out due to drought, disease, or other causes, extirpated sites could be recolonized via immigration from nearby populations. However, as numbers of populations declined and as populations have become more isolated, they are less likely to be recolonized if a local extirpation occurs. Also, most of the larger source populations along major rivers and in cienega complexes have disappeared.[174]

Although the status of CLF in Arizona was considered "roughly stable" with no evidence of decline between 2002 and 2009, the population has been augmented with captive-reared frogs and translocations of egg masses for at least 25 years. In 2020, the Phoenix Zoo celebrated the release of 25,000 captive-reared frogs and tadpoles into the wild since 1995. Without these conservation efforts, Chiricahua leopard frogs might well already have disappeared across much of their residual natural range due to habitat degradation and disease. A review of range-wide CLF population trends has not been conducted since 2011.[175]

Commercial livestock operations on public land have been and continue to be detrimental to CLF. Unfortunately, due to widespread landscape alteration to support this highly prioritized and subsidized industry,

---

tigrinum stebbinsi. *Diseases of Aquatic Organisms, 31*(3), pp.161-167.; Listing of the Chiricahua Leopard Frog (*Rana chiricahuensis*), Final rule with a special rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register, Vol. 67, No. 114, June 13, 2002, page 40801.; Belsky, A.J., Matzke, A. and Uselman, S., 1999. Survey of livestock influences on stream and riparian ecosystems in the western United States. *Journal of Soil and Water Conservation, 54*(1), pp. 419-431.; Poff, B., Koestner, K.A., Neary, D.G. and Henderson, V., 2011. Threats to riparian ecosystems in Western North America: an analysis of existing literature [Journal of the American Water Resources Association, 47(6)] pp. 1241-1254.

[167] Gunderson, D.R., 1968. Floodplain use related to stream morphology and fish populations. The Journal of Wildlife Management, pp. 507-514.

[168] Chapman, D.W., 1988. Critical review of variables used to define effects of fines in redds of large salmonids. Transactions of the American Fisheries Society, 117(1), pp. 1-21.

[169] Sredl, M.J., Howland, J.M., Wallace, J.E. and Saylor, L.S., 1997. Status and distribution of Arizona's native ranid frogs. *Ranid frog conservation and management. Arizona Game and Fish Department, Nongame and Endangered Wildlife Program, Technical Report, 121*(2002), pp. 45-101.

[170] Listing of the Chiricahua Leopard Frog (*Rana chiricahuensis*), Final rule with a special rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register, Vol. 67, No. 114, June 13, 2002, page 40801.

[171] Schepers, J.S. and Francis, D.D., 1982. *Chemical water quality of runoff from grazing land in Nebraska: I. Influence of grazing livestock* (Vol. 11, No. 3, pp. 351-354). American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America.; Boyer, R. and Grue, C.E., 1995. The need for water quality criteria for frogs. *Environmental Health Perspectives, 103*(4), pp. 352-357.

[172] Schuytema, G.S. and Nebeker, A.V., 1999. Effects of ammonium nitrate, sodium nitrate, and urea on red-legged frogs, Pacific treefrogs, and African clawed frogs. *Bulletin of Environmental Contamination and Toxicology, 63*(3), pp. 357-364.

[173] Sredl, M.J. and Howland, J.M., 1994. Conservation and management of Madrean populations of the Chiricahua leopard frog, Rana chiricahuensis.; Sredl, M.J., Howland, J.M., Wallace, J.E. and Saylor, L.S., 1997. Status and distribution of Arizona's native ranid frogs. *Ranid frog conservation and management. Arizona Game and Fish Department, Nongame and Endangered Wildlife Program, Technical Report, 121*(2002), pp. 45-101.

[174] Reinitiated Biological Opinion on Stocking of Trout at Peña Blanca Lake, Santa Cruz County, Arizona. USFWS document 22410-2010-F-0279R1.

[175] Chiricahua Leopard Frog (*Lithobates* [=*Rana*] *chiricahuensis*); 5-Year Review: Summary and Evaluation; USFWS Arizona Ecological Services Office, Phoenix, Arizona, January 2011.

CLF are now forced to depend on artificial livestock tanks to meet most of their life history requirements. We do not argue that stock tanks are not presently an important landscape component for CLF. However, we argue that their management needs to be adjusted so that they remain functional in serving their purpose in supporting CLF PCE's and can continually aid in the recovery of CLF. In reference to livestock use of stock tanks, the CLF Recovery Plan states:

> "While livestock and frog use of aquatic sites is generally compatible, careful management of livestock use at tanks occupied by leopard frogs will be essential to recovery. Absent such management, livestock use could result in destruction or deterioration of leopard frog habitat through excessive trampling, destruction of egg masses and vegetation, and fouling of water quality. Livestock use could also inadvertently result in transmission of chytridiomycosis."[176]

The first goal in recovering the species is to reduce or eliminate threats in areas needed for recovery. According to USFWS, "although significant progress has been made, particularly in regard to establishing or reestablishing populations, if on-going recovery actions are interrupted, drought worsens, or other threats intensify, the status of the species could easily deteriorate."[177]

Our 2020 report documented deterioration of leopard frog habitat through trampling, grazing of vegetation, and fouling of water quality. It focused solely on designated CLF critical habitat on public land. Since CLF's listing in 2002, publication of its Recovery Plan in 2007, and designation of critical habitat in 2012, USFS has never implemented a meaningful strategy to protect CLF habitat and PCE's from livestock grazing. With exceedingly few exceptions, USFWS's own recommendations are not being followed, in violation of the Administrative Procedure Act requirement that federal decisions are not "arbitrary, capricious, or an abuse of discretion."[178] For example, in 2008, and updated in 2009, the Southwest Endangered Species Act Team, which included ample agency representation from both USFS and USFWS, produced a report, "Chiricahua leopard frog (*Lithobates* [*Rana*] *chiricahuensis*): Considerations for making effects determinations and recommendations for reducing and avoiding adverse effects," that proposed explicit conservation recommendations to reduce or avoid adverse effects from cattle grazing to Chiricahua Leopard Frog occupied habitat.[179] The 2008 report states:

> "1. To avoid direct and indirect adverse effects associated with livestock activities:
>
> a. No grazing or livestock management activities will occur in occupied habitat or where the frog is reasonably likely to occur, including aquatic sites and potential dispersal corridors where the frog is reasonably likely to occur.
>
> b. No grazing or livestock management activities will occur in occupied watersheds.
>
> 2. To minimize effects (and take) associated with maintenance and livestock use of stock tanks within dispersal distance from occupied sites:
>
> a. All earthen stock tanks within reasonable dispersal distance of occupied habitat will be surveyed for Chiricahua leopard frogs prior to maintenance activities.
>
> b. Where frogs are present in stock tanks needing maintenance, coordinate with the USFWS to develop and implement a site specific plan to either: 1) forego maintenance; 2) salvage and

[176] Recovery Plan A-7

[177] USFWS Chiricahua Leopard Frog 5-Year Review: Summary and Evaluation, 2011, page 16.

[178] 5 USC §706(2)(A).

[179] Chiricahua leopard frog (*Lithobates* [*Rana] chiricahuensis*): Considerations for making effects determinations and recommendations for reducing and avoiding adverse effects, Southwest Endangered Species Act Team, U.S. Fish and Wildlife Service, New Mexico Ecological Services Field Office, Albuquerque, New Mexico; December 2008, updated August 31, 2009, 75 pp.

temporarily hold frogs (following recovery plan guidance); 3) limit disturbance and work areas to the minimum practicable (i.e., leave stands of emergent vegetation in place, implement measures to minimize the likelihood of disease transmission); 4) fence portions of the occupied pond or tank (portions may be left unfenced to allow some access by livestock); or 5) otherwise develop a comprehensive plan as part of the proposed action to provide necessary tank maintenance that addresses protection of Chiricahua leopard frogs.

c. Where frogs are present, implement recommendations and guidance provided in the recovery plan for stock tank use and maintenance (Appendix A and I).

3. To minimize adverse effects (and take) associated with grazing within occupied habitat (or habitat where the frog is reasonably likely to occur) that is not already excluded from livestock:

   a. Identify habitats and survey suitable habitats for the presence of frogs (using protocol in the recovery plan, Appendix E) prior to livestock entry, or work with USFWS to establish a specified time frame in which surveys will be completed.

   b. Where frogs are found, coordinate with USFWS to develop a site-specific plan to either: 1) ensure that Chiricahua leopard frog habitat will be maintained, or 2) preclude grazing from the site. This may involve constructing alternate water source(s) for livestock (see recovery plan, Appendix A).

   c. Water shall not be pumped or diverted from a site occupied by Chiricahua leopard frogs.

   d. To minimize trampling and/or ingestion of frogs, metamorphosing frogs, larvae, and eggs in occupied habitat, protect stock tanks sufficiently to permit regeneration of emergent and submergent vegetation.

4. To minimize the contamination of occupied Chiricahua leopard frog habitat by non-native species and *Bd* [*Batrachochytrium dendrobatidis*, or amphibian chytrid fungus]:

   a. Where new or existing sites occupied by Chiricahua leopard frogs occur, water shall not be hauled to the site from another aquatic site that supports leopard frogs, bullfrogs, tiger salamanders, crayfish, or fish.

   b. To avoid the transfer of *Bd*, water hauled to occupied sites should originate from sources either within the same drainage as the target site, or preferably from ground water or domestic/treated sources.

   c. The permittees and their employees will be instructed to sanitize (following recovery plan recommendations) or dry out equipment used in maintenance of stock tanks or after other activities occurring in wetland or riparian areas prior to visiting occupied sites to prevent the spread of chytridiomycosis.

   d. When new tanks are to be constructed, coordinate with AGFD or NMDGF and USFWS to identify known locations of non-native aquatic species in relation to the proposed new tanks. Assess the threats and review the locations of the new tanks based on the occurrence of non-native species and their likely dispersal ranges.

   e. Live fish, crayfish, bullfrogs, leopard frogs, salamanders, or other aquatic organisms shall not be intentionally moved by permittees or their employees among livestock tanks or other aquatic sites.

5. To reduce adverse effects to aquatic sites from livestock impacts in surrounding uplands (e.g., sediment input to occupied habitats):

    a. Apply utilization standards (e.g., forage use guidelines) or other accepted methods to ensure upland and riparian vegetation conditions provide filtration of sediments and protect bank stability. Identify a means of monitoring the standard or method and identify action that will be taken to prevent exceeding the standard.

    b. Establish a non-grazed buffer around or along occupied aquatic sites sufficient to adequately filter sediments and excrement generated by livestock use of surrounding uplands.

6. To reduce adverse effects to occupied habitats from other land treatments associated with livestock management (e.g., herbicide application, prescribed fire, road construction), incorporate measures such as buffers around drainages (upstream and downstream of occupied sites), erosion control structures, and buffers around the sites themselves. If herbicides are proposed, use recommendations from White (2004).

7. To reduce adverse effects to frogs that may disperse from occupied sites to unoccupied sites within the action area:

    a. Identify likely or potential dispersal corridors with the assistance of Recovery Team/USFWS personnel. Include uplands, and ephemeral and perennial drainages within accepted dispersal distances.

    b. Protect these habitats from livestock use or concentrations of livestock during likely times of dispersal, or minimize impacts from livestock and associated land treatments to these habitats during those times.

8. To promote the conservation of the species, evaluate suitable habitat to identify potential recovery sites, particularly if the grazing allotment lies within a Management Area. Work with USFWS and the Recovery Team to investigate such opportunities. If such sites are identified and are not already considered among habitats where frogs are reasonably likely to occur during the life of the grazing project, protect them as if they were occupied (see Recovery Actions 1.1-1.4 and 2 in the recovery plan) and include them in effects analyses as such."[180]

Current Take Statements, including the latest one issued in 2021 for continued grazing on the Coronado, do not support CLF delisting criteria according to the Recovery Plan presented below.

The Chiricahua leopard frog will be considered for delisting when:

> "1. At least two metapopulations located in different drainages (defined here as USGS 10- digit Hydrologic Units) plus at least one isolated and robust population occur in each RU that exhibit long-term persistence and stability (even though local populations may go extinct in metapopulations) as demonstrated by a scientifically acceptable population monitoring program. Interpreting the results of the monitoring program will take into account precipitation cycles of drought or wet periods and the effects of such cycles on population persistence.
>
> 2. Aquatic breeding habitats, including suitable, restored, and created habitats necessary for persistence of metapopulations and robust isolated populations identified in criterion 1, are protected and managed in accordance with the recommendations in this plan.

[180] Id., Section III, pages 19-21.

> 3. The additional habitat needed for population connectivity, recolonization, and dispersal is protected and managed for Chiricahua leopard frogs, in accordance with the recommendations in this plan.
>
> 4. Threats and causes of decline have been reduced or eliminated, and commitments for long-term management are in place in each RU such that the Chiricahua leopard frog is unlikely to need protection under the ESA in the foreseeable future."[181]

First and foremost, aquatic breeding habitats are not being created and restored. They are also not being protected according to interagency recommendations listed above or the recommendations put forth in the 2007 Recovery Plan:

> "Livestock grazing in and around stock tanks supporting leopard frogs should be managed so as to avoid destruction or excessive deterioration of leopard frog habitat. This includes: 1) subject to available funding and approval by the participating land manager, fencing of portions of tanks that allows both access for cattle and places where frogs and their habitat will be undisturbed by cattle; 2) avoidance of excessive trampling, especially during frog breeding periods when egg masses are easily destroyed; and 3) appropriate management of the numbers and seasonality of livestock use to avoid excessive sedimentation, erosion, or degradation of water quality."

Second, habitat for dispersal is not being protected and managed according to the new ITS. Threats and causes of decline are not being reduced or eliminated. The new 2021 Coronado ITS does not support "at least two metapopulations located in different drainages plus at least one robust population that exhibits long-term persistence and stability." Conversely, according to the new 2021 Coronado ITS statement, an entire CLF population and its breeding habitat could be affected or even wiped out for a year in any (or all) EMA(s), without even triggering take. And to make matters worse, the ITS fails not only to provide for a dependency on the action itself, the ITS fails to provide for protection of non-stock pond designated riparian Critical Habitat which is directly dependent on the action. As noted above, USFWS has abrogated its professional and legal responsibility to protect designated riparian Critical Habitat to the Coronado National Forest's scheme of managing the riparian habitat based on cow "forage utilization standards…and rest-rotation grazing activities," which are not applicable for the protection of threatened and endangered riparian species.

Consequently, the 2021 Biological Opinion's CLF ITS is arbitrary and capricious and violates the Administrative Procedure Act.[182]

YELLOW-BILLED CUCKOO BACKGROUND AND HABITAT NEEDS

The U.S. Fish and Wildlife Service listed the Western Yellow-billed Cuckoo (Yellow-billed Cuckoo) (*Coccyzus americanus occidentalis*) as a Threatened Species in 2014.[183] This listing compiled by USFWS included comprehensive coverage of Yellow-billed Cuckoo dramatic habitat loss, fragmentation and degradation, severe

[181] 2007 CLF Recovery Plan, p. v.

[182] 5 USC §706(2)(A).

[183] Rules and Regulations. Determination of Threatened Status for the Western Distinct Population Segment of the Yellow-billed Cuckoo (*Coccyzus americanus*), Federal Register, Vol. 79, No. 192. October 3, 2014.

widespread population declines, climate change and the number and importance of associated cumulative impacts.[184]

Yellow-billed Cuckoo are facing steep population declines in its western breeding grounds owing primarily to loss of native habitat.[185] Once a fairly common summer resident from throughout Arizona, USFWS concluded that Arizona Yellow-billed Cuckoo populations declined significantly starting in the 1970's and that this was directly paralleled by the decline of its preferred breeding habitat, cottonwood-willow riparian communities.[186] Despite the extraordinary ecological and biodiversity values of riparian ecosystems, these places have been the most disturbed and degraded land type in the western United States.[187]

California historically possessed the greatest number of nesting Yellow-billed Cuckoos north of Mexico. California's Yellow-billed Cuckoo populations have been decimated, predictably following the loss, fragmentation, and degradation of Yellow-billed Cuckoo breeding habitat consisting of mature and contiguous cottonwood-willow riparian gallery forests. Arizona now maintains the largest Yellow-billed Cuckoo populations in the United States even though it is currently experiencing dramatic population declines.[188]

Optimal reproductive habitat and its micro-environments for Yellow-billed Cuckoo have been established, are well known, and are thoroughly documented. Optimal Yellow-billed Cuckoo reproductive habitat consists of very large non-fragmented landscapes of old growth mature cottonwood-willow gallery forest, with dense multistory layers of vegetation in both the subcanopy and ground layers, and the presence of perennial surface water.[189] Range-wide breeding habitat is composed of riparian woodlands within floodplains or in upland areas or terraces often greater than 325 ft (100 m) in width and 200 ac (81 ha) or more in extent ***with an overstory and understory vegetation component in contiguous or nearly contiguous patches*** adjacent to intermittent or perennial watercourses.[190]

According to USFWS in their 2021 final determination of critical habitat:

> "As described in the Critical Habitat section, features such as **understory and overstory components with high humidity** are considered important for habitat selection for breeding western yellow-billed cuckoos. This is especially true in ephemeral, tree-lined xeroriparian drainages."[191]

---

[184] Rules and Regulations. Determination of Threatened Status for the Western Distinct Population Segment of the Yellow-billed Cuckoo (*Coccyzus americanus*), Federal Register, Vol. 79, No. 192. October 3, 2014.

[185] Wallace, C.S., Villarreal, M.L. and van Riper III, C., 2013. Influence of monsoon-related riparian phenology on yellow-billed cuckoo habitat selection in Arizona. *Journal of Biogeography*, *40*(11), pp.2094-2107.

[186] USFWS. 2013. Endangered and Threatened Wildlife and Plants; Proposed Threatened Status for the Western Distinct Population Segment of the Yellow-billed Cuckoo (Coccyzus americanus); Proposed Rule. 50 CFR Part 17. Federal Register, Vol. 78, No. 192, Part V. 3 October 2013. Pages 61621-61666.

[187] Bock, C.E., Saab, V.A., Rich, T.D. and Dobkin, D.S., 1993. Effects of livestock grazing on neotropical migratory landbirds in western North America. *Status and management of Neotropical migratory birds. USDA Forest Service, General Technical Report RM-229*, pp.296-309.

[188] Krzysik 2014. Western Yellow-billed Cuckoo Critical Habitat in Arizona. Technical Report. Prescott, AZ 12 October 2014.

[189] Rosenberg, K.V., R.D. Ohmart, W.C. Hunter, and B.W. Anderson. 1991. Birds of the Lower Colorado River Valley. Univ. Arizona Press, Tucson, AZ. 416pp.; Johnson, M.J., S.L. Durst, C.M. Calvo, L. Stewart, M.K. Sogge, G. Bland, and T. Arundel. 2008. Yellow-billed Cuckoo Distribution, Abundance, and Habitat Use Along the Lower Colorado River and its Tributaries, 2007 Annual Report. USGS, Open File Report 2008-1177. 274pp.

[190] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register Vol. 86, No. 75, Wednesday, April 21, 2021, page 20939.

[191] Ibid., page 20815.

Food availability for Yellow-billed Cuckoo is largely influenced by the health, density, and species composition of understory and overstory vegetation.[192] USFWS has determined the presence of abundant, large insect fauna (for example, cicadas, caterpillars, katydids, grasshoppers, large beetles, and dragonflies) and tree frogs during nesting season to be an essential physical or biological feature for this species.[193] In terms of providing foraging opportunities that will ensure Yellow-billed Cuckoo nesting success, understory vegetation or ground cover may be as important as overstory vegetation to suitable western yellow-billed cuckoo habitat. For example:

> "At the ground level, increased forb cover was positively associated with cuckoo site occupancy… low vegetation may also provide an indirect source of food (i.e., an insect breeding and/or feeding ground)… in the South Fork Kern River, cuckoos nested at sites with significantly greater forb cover than was found in the forest at random. Yellow-billed cuckoos feed on a variety of prey, including large macroinvertebrates such as caterpillars, katydids, grasshoppers, crickets, and mantids (Laymon 1980; Halterman 2009), which can be found in this type of habitat (Borror et al. 1989).[194]

Despite the importance of understory vegetation and ground cover to Yellow-billed Cuckoo, especially in their breeding grounds in AZ that are protected with critical habitat designations, cattle grazing degrades these important features in riparian and aquatic habitats throughout the arid Southwest.[195] Overgrazing in riparian (including xeroriparian) habitat has been identified by USFWS as an ongoing threat to Yellow-billed Cuckoo habitat that may require special management, and especially where water is limited (i.e. the Coronado National Forest critical habitat units). Grazing at any level can impact riparian habitat according to USFWS.[196]

USFWS discusses the full suite of threats to Yellow-billed Cuckoo brought on by grazing below:

> "(4) Actions that would result in alteration of western yellow-billed cuckoo habitat from overgrazing of livestock or ungulate (for example, horses, burros) management. Such activities could include, but are not limited to, unrestricted ungulate access and use of riparian vegetation; excessive ungulate use of riparian vegetation during the non-growing season (for example, leaf drop to bud break); overuse of riparian habitat and upland vegetation due to insufficient herbaceous vegetation available to ungulates; and improper herding, water development, or other livestock management actions. These activities could reduce the volume and composition of riparian vegetation, prevent regeneration of riparian plant species, physically disturb nests, alter floodplain dynamics, alter watershed and soil characteristics, alter stream morphology, and facilitate the growth of flammable nonnative plant species."[197]

---

[192] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Proposed Rules, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register, Vol. 79, No. 158, August 15, 2014, page 48551.

[193] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Proposed Rules, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register, Vol. 79, No. 158, August 15, 2014, page 48552.

[194] Johnson, M.J., S.L. Durst, C.M. Calvo, L. Stewart, M.K. Sogge, G. Bland, and T. Arundel. 2008. Yellow-billed Cuckoo Distribution, Abundance, and Habitat Use Along the Lower Colorado River and its Tributaries, 2007 Annual Report. USGS, Open File Report 2008-1177. 274pp.

[195] Bock, C.E., J.H. Bock, L. Kennedy, and Z.F. Jones. 2007. Spread of non-native grasses into grazed versus ungrazed desert grasslands. Journal of Arid Environments 71:229-235; Bock, C.E., V.A. Saab, T.D. Rich, and D.S. Dobkin. 1993. Effects of livestock grazing on Neotropical migratory land birds in Western North America. Pages 296-309 in Status and Management of Neotropical Migratory Birds. D.M. Finch and P.W. Stangel, editors. USDA, Forest Service, GTR RM-229. 422pp.; Fleischner, T.L. 1994. Ecological costs of livestock grazing in western North America. Conservation Biology 8:629-644.; Krueper, D.J. 1993. Effects of land use practices on Western riparian ecosystems. Pages 321-330 in Status and Management of Neotropical Migratory Birds. D.M. Finch and P.W. Stangel, editors. USDA, Forest Service, GTR RM-229. 422pp.

[196] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register Vol. 86, No. 75, Wednesday, April 21, 2021, page 20813.

[197] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Proposed Rules, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register, Vol. 79, No. 158, August 15, 2014, page 48571.

Furthermore, USFWS defines overgrazing as “grazing activity (that) degrades riparian habitat attributes and prevents long-term health and persistence of these systems.[198] In another example, USFWS defines overgrazing as grazing activities that reduce quality and quantity of breeding habitat.[199]

Cattle grazing in Yellow-billed Cuckoo critical habitat, as we illustrate in this Notice, has significantly impacted riparian systems, fouled remaining water, and little to no herbaceous food and cover for invertebrate communities. We demonstrate that abundant and healthy riparian vegetation is missing from the majority of grazing allotments that contain Yellow-billed Cuckoo critical habitat in the Coronado National Forest. Indeed, according to USFWS, habitat degradation associated with poorly managed livestock grazing (generally identified as ‘‘overgrazing’’) is a recognized threat in 70 out of 72 (97%) of critical habitat units.[200] This Notice strongly supports USFWS' claim that overgrazing is a ubiquitous threat to Yellow-billed Cuckoo, especially in the Coronado National Forest.

The Coronado National Forest has repeatedly stated that overgrazing is not a problem and has even requested that overgrazing not be discussed in the context of cuckoo critical habitat. Their comment regarding Yellow-billed Cuckoo critical habitat designation, and USFWS’s corroborative response, is presented below:

> “*Comment*: The USFS reiterated that overgrazing does not occur on most of the 20 units in the Coronado National Forest that were proposed as critical habitat. The USFS requested removal of the statement regarding overgrazing from the final rule. [201]
>
> *Our Response:* Our discussion of overgrazing is in reference to the special management and protections that may be required in areas identified as critical habitat. Grazing operations that are properly managed, such as USFS lands under management under the Coronado National Forest Land Management Plan and Allotment Management Plans, may be in compliance with grazing standards but may still result in reduced riparian habitat quality and quantity over time for western yellow-billed cuckoos."[202]

Besides directly affecting Yellow-billed Cuckoo behavior and foraging opportunities, cattle grazing causes loss of riparian regeneration. Loss of riparian habitat regeneration caused by poorly managed grazing is an acknowledged and prominent threat to Yellow-billed Cuckoo by USFWS,[203] and the 2014 Yellow-billed Cuckoo ESA listing clearly states that “managing grazing so that native riparian trees and shrubs will regenerate on a regular basis is especially beneficial.”[204] Unfortunately, managing grazing for regeneration is not the case in the Coronado National Forest. As illustrated in this Notice, cattle are consistently concentrated in riparian zones during the growing season and are removing riparian vegetation down to the roots, leaving bare ground and dust-bowl conditions. These impacts, as demonstrated in this Notice, reasonably fit the definition of overgrazing or poorly

---

[198] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register Vol. 86, No. 75, Wednesday, April 21, 2021, page 20808.

[199] Ibid., page 20853.

[200] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Proposed Rules, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register, Vol. 79, No. 158, August 15, 2014, page 48558.

[201] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register Vol. 86, No. 75, Wednesday, April 21, 2021, page 20801.

[202] Id.

[203] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Proposed Rules, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register, Vol. 79, No. 158, August 15, 2014, page 48555.

[204] Id.

managed grazing and are causing direct and indirect harm to Yellow-billed Cuckoo populations by removing habitat structure and associated prey base.

Diminished riparian vegetation, as observed throughout the Coronado National Forest, negatively affect streamflow processes and impact abundance and distribution of fine sediment deposited on floodplains which is critical for the development, abundance, distribution, maintenance, and germination of trees in the riparian zone that become future Yellow-billed Cuckoo habitat.[205] Riparian vegetation and intact grasses are required to capture sediment during rainy seasons that becomes seedbeds for germination and growth of the riparian vegetation upon which Yellow-billed Cuckoo depend. Significantly grazed riparian zones fail to capture sediment and instead begin to erode. This disruption of stream flow processes ultimately leads riparian forests to senesce, unable to sustain recruitment of the new trees and varied vegetative structure required for western yellow-billed cuckoo nesting and foraging. [206] Therefore, grazing of the severity that we have observed on the Coronado National Forest has immediate short-term impacts on Yellow-billed Cuckoo fitness as well as long-term impacts that gradually cause the loss of riparian gallery forest.

We demonstrate in this Notice 20 more grazing allotments where grazing has caused adverse modification of Yellow-billed Cuckoo critical habitat. Fencing is direly needed to exclude and better manage authorized livestock than what we are observing in the field. Riparian vegetation should be fully allowed to propagate for the full course of the growing season. Yellow-billed Cuckoo critical habitat should be completely protected from livestock grazing, especially on the Coronado National Forest where many stream systems are ephemeral, and especially in severe, extreme, and exceptional drought years. Monitored and maintained cow exclosures of designated Yellow-billed Cuckoo riparian Critical Habitat are essential to ensure survival much less recovery.

USFWS states that "because the western yellow-billed cuckoo is listed as threatened, all the units are occupied during the breeding season and habitat would need to be protected during the nonbreeding season, the majority of actions necessary to conserve the species would be required based on the listing of the western yellow-billed cuckoo."[207] Unfortunately, Yellow-billed Cuckoo habitat protection exists only on paper, not in practice. Based on the impacts of current authorized actions, as illustrated in this Notice, Yellow-billed Cuckoo are reasonably expected to continue declining until an "Endangered" ESA status will be required.

SONORA CHUB BACKGROUND AND HABITAT NEEDS

Sonora chub is listed as threatened with critical habitat. In the United States, it occurs in the Sycamore Creek drainage and in California Gulch in Santa Cruz County, Arizona. In Mexico, it occurs in the Rio de la Concepcion drainage.[208]

Critical habitat was designated at the time of Federal listing to include Sycamore Creek, extending downstream from and including Yanks Spring (=Hank and Yank Spring), to the International border. Also designated was the lower 2.0 km of Penasco Creek and the lower 0.4 km of an unnamed stream entering Sycamore Creek from the west, about 2.4 km downstream from Yanks Spring. In addition to the aquatic environment, critical

[205] Ibid., page 48552.

[206] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Proposed Rules, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register, Vol. 79, No. 158, August 15, 2014, page 48552.

[207] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register Vol. 86, No. 75, Wednesday, April 21, 2021, page 20831.

[208] U. S. Fish and Wildlife Service. 1992. Recovery Plan for Sonora chub (*Gila ditaenia*). U.S. Fish and Wildlife Service, Region 2, Albuquerque, New Mexico. 50 pages.

habitat includes a 12-meter-wide riparian area along each side of Sycamore and Penasco creeks. This riparian zone is believed to be essential to maintaining the creek ecosystem and stream channels, and to conserve the species.[209]

In 1986, when critical habitat for Sonora chub was determined, Sonora chub were not known to occur in California Gulch in Santa Cruz County, Arizona, so critical habitat was not designated in that stream.[210] Since then, it has been determined that California Gulch is occupied by Sonora chub. Designation of critical habitat should be modified to include California Gulch and possibly Warsaw Canyon, a drainage to the west. The Center filed a formal Petition to revise Sonora Chub Critical Habitat on July 30, 2021.[211]

Cattle grazing is a recognized threat to Sonora chub by way of degrading habitat in riparian corridors with potential adverse effects.[212] Principle mechanisms through which grazing negatively impacts this species include alteration of bank structures, alteration of substrates, alteration of water regimes, altered stream channel characteristics, altered aquatic vegetation composition, altered bank vegetation structure, change in food availability, change in water temperature, change in water quality, habitat fragmentation, increased turbidity, increased pathogens, and direct trampling.[213]

According to the Sonora chub Recovery Plan, the primary recovery strategy is to maintain populations of Sonora chub in all extant locations and to protect existing habitat from degradation.[214] Rather than recovery criteria, the plan includes recovery objectives to maintain populations of Sonora chub in all extant locations, and this includes protecting existing habitat from cattle impacts by using exclosure fencing around known occupied riparian areas.

This Notice demonstrates that the modest recovery objectives of protecting tiny parcels of local canyon ecosystems for a threatened and highly endemic native fish has not occurred, and instead these areas have been damaged by grazing.

NORTHERN MEXICAN GARTERSNAKE BACKGROUND AND HABITAT NEEDS

Both northern Mexican gartersnakes (*Thamnophis eques megalops,* 'NMGS') and narrow-headed gartersnakes (*Thamnophis rufipunctatus,* 'NHGS') are native Arizona reptiles that have declined dramatically throughout their range, reflected by widespread reductions of extant populations as well as local extirpations.[215] The northern Mexican gartersnake and the narrow-headed gartersnake are each highly imperiled as a consequence of

[209] Ibid., page 4.

[210] 2013 Sonora Chub 5-year Review pg. 4

[211] Petition to revise Sonora Chub (*Gila ditaenia*) Critical Habitat to reflect current status and to protect known occupied and recovery habitat in California Gulch, Center for Biological Diversity, July 30, 2021, http://biologicaldiversity.org/species/fish/pdfs/sonora-chub-CH-REVISION-PETITION-20210730.pdf.

[212] 2019 Supplemental Finding for Sonora Chub Recovery Plan, USFWS, June 2019, pg. 7.

[213] USFWS technical document authored by Magaña, H.A. and Rinne, J.N. (2001) https://www.fs.fed.us/rm/boise/AWAE/projects/fish_cattle/Sonora%20chub.pdf accessed 6-9-21.

[214] U. S. Fish and Wildlife Service. 1992. Recovery Plan for Sonora chub (*Gila ditaenia*). U.S. Fish and Wildlife Service, Region 2, Albuquerque, New Mexico. 50 pages.

[215] Brennan, Thomas C., and Andrew T. Holycross. Field guide to amphibians and reptiles in Arizona. Arizona Game and Fish Dept., 2006.

habitat destruction, modification and fragmentation; introduction and proliferation of non-native species; small and poorly-connected populations vulnerable to inbreeding depression; and climate change and associated drought.[216]

Although northern Mexican gartersnakes have been found in a variety of vegetation types within the riparian zone (i.e., grasses, shrubs, and wetland plants), the underlying characteristic of this habitat needed by the gartersnake appears to be dense vegetation or other natural structural components that provide cover for the species[217]. Northern Mexican gartersnakes use habitats with perennial stream flow in northern Arizona, but outside of water are observed concealed under dense vegetative most of the time.[218]

According to the April 28, 2020, proposed rule for Northern Mexican gartersnake critical habitat designation[219], the Primary Biological Features required by the snakes include:

> 1. "Perennial or spatially intermittent streams that provide both aquatic and terrestrial habitat that allows for immigration, emigration, and maintenance of population connectivity of northern Mexican gartersnakes and contain:
>
> > (A) Slow-moving water (walking speed) with in-stream pools, off-channel pools, and backwater habitat;
> >
> > (B) Organic and natural inorganic structural features (e.g., boulders, dense aquatic and wetland vegetation, leaf litter, logs, and debris jams) within the stream channel for thermoregulation, shelter, foraging opportunities, and protection from predators;
> >
> > (C) Terrestrial habitat adjacent to the stream channel that includes riparian vegetation, small mammal burrows, boulder fields, rock crevices, and downed woody debris for thermoregulation, shelter, foraging opportunities, brumation, and protection from predators; and
> >
> > (D) Water quality that is absent of pollutants or, if pollutants are present, at levels low enough such that recruitment of northern Mexican gartersnakes is not inhibited."[220]
>
> "6. Lentic wetlands including offchannel springs, cienegas, and natural and constructed ponds (small earthen impoundment) with:
>
> > (A) Organic and natural inorganic structural features (e.g., boulders, dense aquatic and wetland vegetation, leaf litter, logs, and debris jams) within the ordinary high water mark for thermoregulation, shelter, foraging opportunities, brumation, and protection from predators;

[216] Wood, D.A., Emmons, I.D., Nowak, E.M., Christman, B.L., Holycross, A.T. and Vandergast, A.G., 2018. Conservation genomics of the Mogollon Narrow-headed gartersnake (Thamnophis rufipunctatus) and Northern Mexican gartersnake (Thamnophis eques megalops) (No. 2018-1141). US Geological Survey.

[217] Designation of Critical Habitat for the Northern Mexican Gartersnake and Narrow-Headed Gartersnake, Proposed Rules, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register, Vol. 85, No. 82, April 28, 2020, page 23615.

[218] Ibid., page 23617.

[219] Ibid., page 23623-4.

[220] Id.

(B) Riparian habitat adjacent to ordinary high water mark that includes riparian vegetation, small mammal burrows, boulder fields, rock crevices, and downed woody debris for thermoregulation, shelter, foraging opportunities, and protection from predators; and

(C) Water quality that is absent of pollutants or, if pollutants are present, at levels low enough such that recruitment of northern Mexican gartersnakes is not inhibited.

7. Ephemeral channels that connect perennial or spatially intermittent perennial streams to lentic wetlands in southern Arizona where water resources are limited." [221]

For these specified habitat features, cattle grazing can directly result in negative impacts to riparian ecosystems, cienegas and other wetlands. Grazing affects small stream channels and backwater pools by chiseling and trampling banks and shorelines, results in removal of dense vegetation that decreases shelter, cover, foraging opportunities and protection from predators, and also leads to trampled and vegetatively diminished uplands and water quality fouled by feces.

According to USFWS, "Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may violate 7(a)(2) of the Act by destroying or adversely modifying such habitat, or that may be affected by such designation. Activities that the Services may, during a consultation under section 7(a)(2) of the Act, find are likely to destroy or adversely modify critical habitat include, but are not limited to:"[222]

1) "Actions that would significantly increase sediment deposition or scouring within the stream channel or pond that is habitat for the northern Mexican or narrow-headed gartersnake, or one or more of their prey species within the range of either gartersnake species. Such activities could include, but are not limited to: Poorly managed livestock grazing…"[223]

2) "Actions that would alter water chemistry beyond the tolerance limits of a gartersnake prey base. Such activities could include…biological pollutants… livestock grazing that results in waters heavily polluted by feces;"[224]

3) "Actions that would remove, diminish, or significantly alter the structural complexity of key natural structural habitat features in and adjacent to aquatic habitat." [225]

This NOI presents new information that cattle grazing on the Coronado National Forest has resulted in adverse modification of gartersnake habitat that has been designated as critical to recovering this species. USFWS states that maintaining fencing and managing trespass cattle limits grazing of riparian pastures to the non-growing season and lessens impacts to proposed critical habitat;[226] however, this doesn't go far enough. Because of the

[221] Designation of Critical Habitat for the Northern Mexican Gartersnake and Narrow-Headed Gartersnake, Proposed Rules, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register, Vol. 85, No. 82, April 28, 2020, page 23623-4.

[222] Ibid., page 23633.

[223] Id.

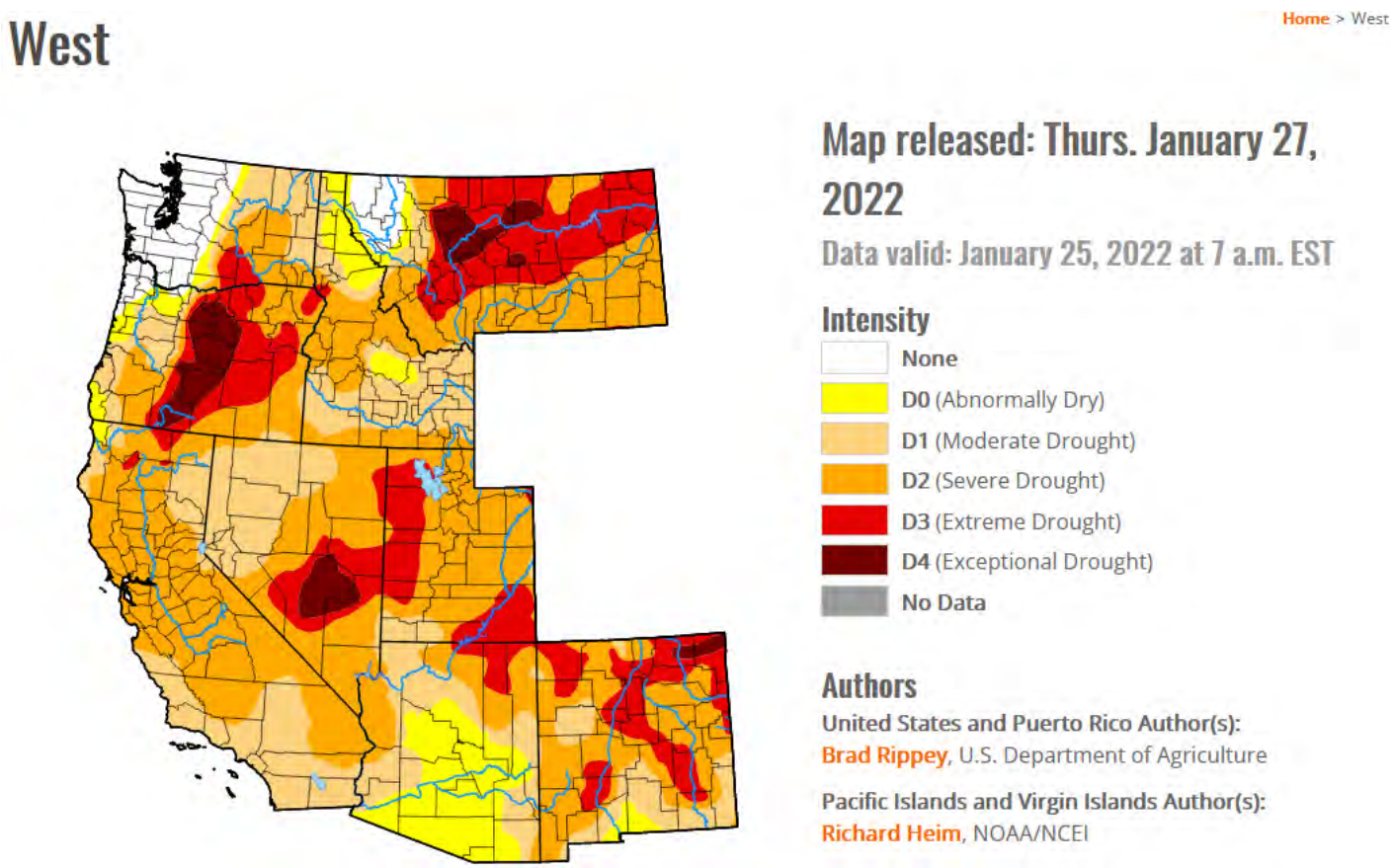
[224] Id.

[225] Designation of Critical Habitat for the Northern Mexican Gartersnake and Narrow-Headed Gartersnake, Proposed Rules, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register, Vol. 85, No. 82, April 28, 2020, page 23633.

[226] Ibid., page 23641.

absence of management plans or conservation agreements that meaningfully conserve the physical and biological features that these gartersnakes depend on[227], grazing must be excluded in all areas designated as critical habitat. Imperiled gartersnakes will ultimately depend on riparian restoration, not degradation, as we will illustrate in this Notice. Grazing activities result in a reduction of the amount or distribution of these key habitat features that are important for gartersnake thermoregulation, shelter, protection from predators, and foraging opportunities. Based on our recent habitat surveys, grazing activities are continually diminishing riparian ecosystems on which these imperiled native reptiles depend and should no longer be allowed to continue in areas designated as critical habitat.

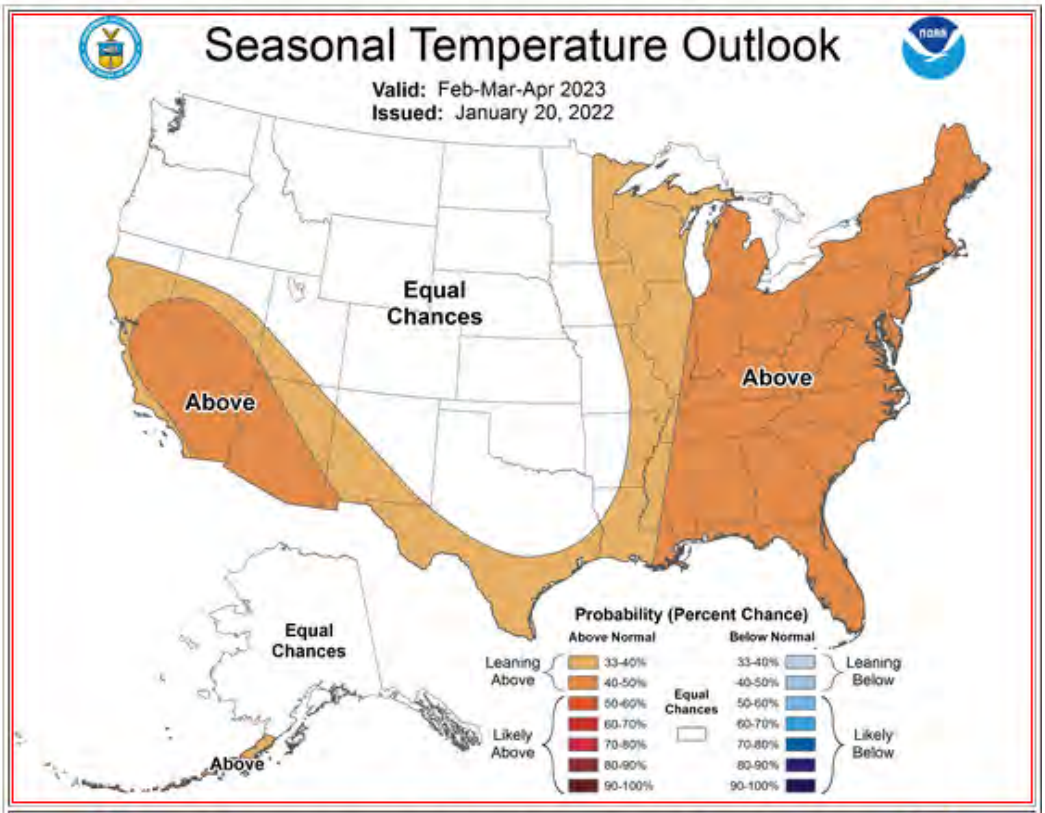
RIPARIAN DEPENDENT ENDANGERED SPECIES HABITAT NEEDS WITH CLIMATE CHANGE AND DROUGHT

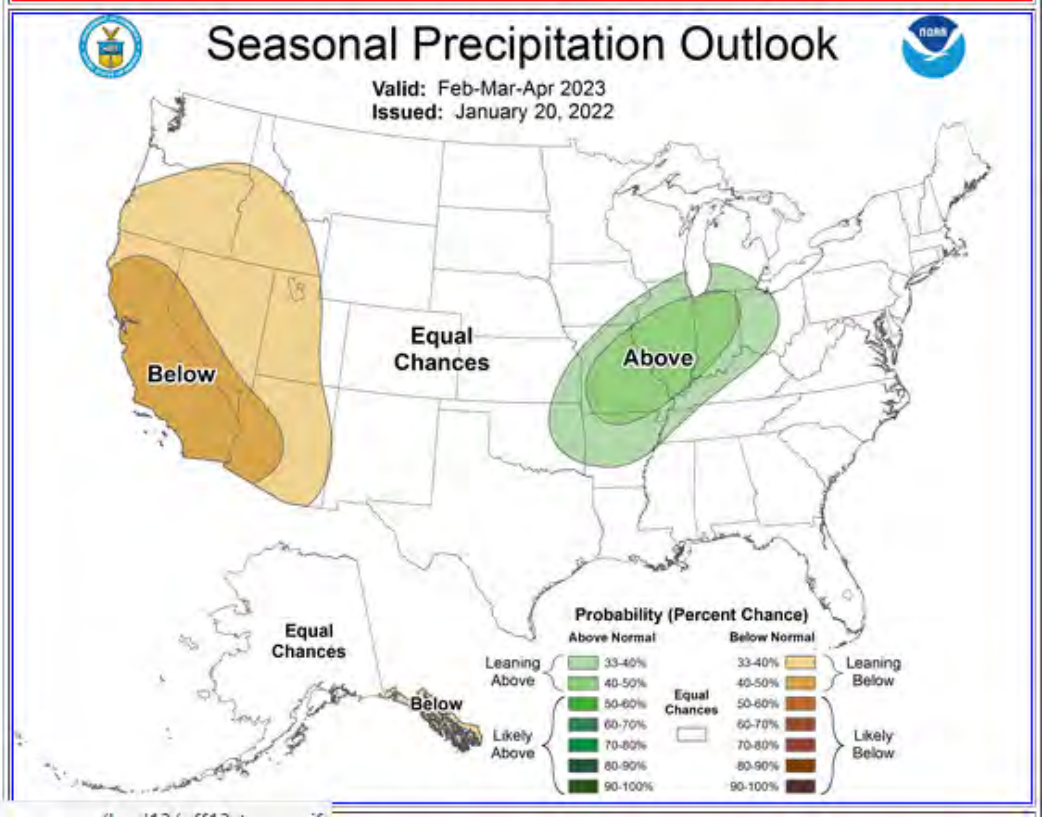


This is a problem short term (https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?West above).

[227] Nowak, E.M. and Santana-Bendix, M.A., 2002. Status, distribution and management recommendations for the narrow-headed gartersnake (Thamnophis rufipunctatus) in Oak Creek, Arizona. Arizona Game and Fish Department.

This is a problem in the longer term. See also for example, https://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=13:





Or for example, note that in "Rapid intensification of the emerging southwestern North American megadrought in 2020-2021," Williams, Cook and Smerdon, conclude:

> "This drought will very likely persist through 2022, matching the duration of the late-1500s megadrought."[228]

There is no evidence to suggest long term climate trends will improve.[229]

Worsening climate change and the Southwest's resulting persistent and increasing temperatures and drought are particularly concerning given the way that the Coronado National Forest manages designated riparian Critical Habitat. The Coronado National Forest uses a scheme based on the use of cow grazing utilization metrics that do not protect riparian dependent endangered species to govern habitat conditions. Unlike the other Forests throughout the Region, the Coronado National Forest has somehow avoided providing protective Critical Habitat riparian exclosures for the Western Yellow-billed Cuckoo ("Yellow-billed Cuckoo"), and other riparian endangered species.

As Beschta *et al*. note:

> "The combined effects of ungulates (domestic, wild, and feral) and a changing climate present a pervasive set of stressors on public lands, which are significantly different from those encountered during the evolutionary history of the region's native species. The intersection of these stressors is setting the stage for fundamental and unprecedented changes to forest, arid, and semi-arid landscapes in the western US (Table 1) and increasing the likelihood of alternative states. Thus, public-land management needs to focus on restoring and maintaining structure, function, and integrity of ecosystems to improve their resilience to climate change (Rieman and Isaak 2010)."[230]

And as Donahue summarized,

> "Livestock grazing exacerbates the effects of climate change on the public lands, hinders the ability of ecosystems to adapt to climate change, and contributes to climate change as a result of methane emissions and reduced potential of soils to sequester carbon.[231]

---

[228] Rapid intensification of the emerging southwestern North American megadrought in 2020-2021, A. Park Williams, Benjamin I. Cook and Jason E. Smerdon, Nature Climate Change, 2022, https://doi.org/10.1038/s41558-022-01290-z .

[229] Large contribution from anthropogenic warming to an emerging North American megadrought, A. Park Williams, et al.; Science 368, 314-318; April 17, 2020.; Vose, R.S., D.R. Easterling, K.E. Kunkel, A.N. LeGrande, and M.F. Wehner. 2017. Temperature changes in the United States. In: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 185-206, doi: 10.7930/J0N29V45.; Easterling, D.R., K.E. Kunkel, J.R. Arnold, T. Knutson, A.N. LeGrande, L.R. Leung, R.S. Vose, D.E. Waliser, and M.F. Wehner. 2017. Precipitation change in the United States. In: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 207-230, doi: 10.7930/J0H993CC.; Wehner, M.F., J.R. Arnold, T. Knutson, K.E. Kunkel, and A.N. LeGrande. 2017. Droughts, floods, and wildfires. In: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 231-256 doi: 10.7930/J0CJ8BNN.; Seager, R., T. Mingfang , L. Cuihua, N. Naik, B. Cook, J. Nakamura, and H. Liu. 2013. Projections of declining surface-water availability for the southwestern United States. Nature Climate Change 3: 482-486.

[230] Adapting to Climate Change on Western Public Lands: Addressing the Ecological Effects of Domestic, Wild and Feral Ungulates; Robert L. Beschta, Debra L. Donahue, Dominick A. DellaSala, Jonathan J. Rhodes, James R. Karr, Mary H. O'Brien, Thomas L. Fleischner, and Cindy Deacon Williams, Environmental Management (2013) 51:474-491.

[231] Livestock Production, Climate Change, and Human Health: Closing the Awareness Gap, Debra L. Donahue, Environmental Law Reporter, 45 ELR 11112, 12-2015, http://ssrn.com/abstract=2696741; citing: *See, e.g.*, Beschta et al., *supra* note 59, at 476-81; Ripple et al., *supra* note 2, at 2, 3. Almost nothing is known, however, about the ability of shrublands to sequester carbon. *See* Jack A. Morgan et al., *Carbon Sequestration in Agricultural Lands of the United States*, 65 J. Soil & Water Conservation 6A, 7A (2010), doi:10.2489/jswc.65.1.6A. This is a "critical research need," *see id.*, particularly since shrubs dominate large areas of the public lands.

And as USFWS' lead Yellow-billed Cuckoo species expert reported in "Grazing Impacts Input"[232]:

> "**As drought and climate change progress and livestock grazing continues, the riparian and xero-riparian shrub and tree recruitment and survival will diminish. Riparian and xero-riparian tree and shrub cover in drainage bottoms will diminish unless offsetting actions are taken**."[233]
>
> "**A single summer of above average monsoon rain does not compensate for years of drought and livestock impacts. Reducing/eliminating livestock access to ephemeral, intermittent, and perennial drainages following these rare periods of good rainfall will allow tree and shrub seedlings to grow and survive**."[234]
>
> "**Livestock grazing and climate change both contribute toward reduced overstory and subcanopy cover** and/or conversion to more arid adapted tree species in ephemeral, intermittent, and perennial drainages. **We cannot control climate change, but we can control livestock impacts from grazing, trampling, erosion, and soil compaction**."[235]

But USFWS' administrators ignored their own species expert in the production of the 2021 Biological Opinion.

Consequently, the 2021 Biological Opinion fails to utilize and acknowledge the "best scientific data available"[236] as required by law to analyze and to incorporate the deleterious combined effects of cows and climate change on designed riparian Critical Habitat.

GENERAL ENDANGERED SPECIES ACT VIOLATIONS

Section 7 of the ESA requires federal agencies, in consultation with USFWS, to ensure that any action authorized, funded, or carried out by the agency is not likely to (1) jeopardize the continued existence of any threatened or endangered species, or (2) result in the destruction or adverse modification of the critical habitat of such species. 16 U.S.C. § 1536(a)(2). "Action" is broadly defined to include all activities or programs of any kind authorized, funded, or carried out by federal agencies, including actions directly or indirectly causing modifications to the land, water, or air; and actions intended to conserve listed species or their habitat. 50 C.F.R. § 402.02.

In addition to the obligation to avoid jeopardizing species or destroying or adversely modifying their critical habitat under Section 7(a)(2) of the ESA, Section 7(a)(1) imposes an obligation on all federal agencies, in consultation with the USFWS, to "carry[] out programs for the conservation" of listed species. 16 U.S.C. § 1536(a)(l). This provision imposes an "affirmative duty on each federal agency to conserve each of the species listed." Sierra Club v. Glickman, 156 F.3d 606,616 (5th Cir. 1998); accord Pyramid Lake Paiute Tribe, 898 F.2d at 1416-17 (noting that federal agencies have "affirmative obligations to conserve under [S]ection 7(a)(1)"). "Conserve" is defined by the ESA to mean recovery, i.e., the "use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided [in the ESA] are no longer necessary." 16 U.S.C § l 536(a)(1).

For each proposed federal action, the action agency must request from USFWS whether any listed or proposed species may be present in the area of the agency action. 16 U.S.C. § 1536(c)(1); 50 C.F.R. § 402.12. If listed or proposed species may be present in such area, the action agency must prepare a "biological assessment" to determine whether the listed species may be affected by the proposed action. Id. If the action agency determines that

[232] Grazing Impacts Input, Susan Sferra, November 11, 2021.

[233] Id., page 1.

[234] Id., page 2.

[235] Id., page 3.

[236] 16 U.S.C. § 1533(b)(2).

its proposed action may affect any listed species or critical habitat, the agency must engage in formal consultation with USFWS. 50 C.F.R. § 402.14. To complete formal consultation, USFWS must provide the action agency with a "biological opinion" explaining how the proposed action will affect the listed species or habitat. 16 U.S.C. § 1536(b); 50 C.F.R. § 402.14.

If USFWS concludes that the proposed action will jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat, the biological opinion must outline "reasonable and prudent alternatives." 16 U.S.C. § 1536(b)(3)(A). If USFWS concludes in the biological opinion that the action is not likely to jeopardize the continued existence of a listed species, and will not result in the destruction or adverse modification of critical habitat, USFWS must provide an "incidental take statement" ("ITS"), specifying the amount or extent of such incidental taking on the listed species, any "reasonable and prudent measures" that USFWS considers necessary or appropriate to minimize such impact, and setting forth the "terms and conditions" that must be complied with by the action agency to implement those measures. 16 U.S.C. § 1536(b)(4); 50 C.F.R. § 402.14(i).

The reinitiation of consultation is required and must be requested by the action agency or USFWS if discretionary federal involvement or control over the action has been retained or is authorized by law and (1) the amount or extent of taking specified in the ITS has been exceeded; (2) new information reveals effects of the action that may affected listed species or critical habitat in a manner or to an extent not previously considered; (3) the action is modified in a manner that causes an effect to a listed species or critical habitat that was not considered in the biological opinion; or (4) a new species is listed or critical habitat designated that may be affected by the identified action. 50 C.F.R. § 402.16(a).

To monitor the impacts of incidental take, the action agency must monitor and report the impact of its action on the listed species to USFWS as specified in the ITS. 16 U.S.C. § 1536(b)(4); 50 C.F.R. §§ 402.14(i)(1)(iv), 402.14(i)(3). If, during the course of the action, the amount or extent of incidental taking is exceeded, the action agency must reinitiate consultation with USFWS immediately. 50 C.F.R. § 401.14(i)(4).

Section 9 of the ESA and its implementing regulations prohibit the unauthorized "take" of listed species. 16 U.S.C. § 1538(a)(1); 16 U.S.C. § 1533(d); 50 C.F.R. § 17.31. "Take" is defined broadly to include harming, harassing, trapping, capturing, wounding or killing a protected species either directly or by degrading its habitat. 16 U.S.C. § 1532(19). Taking that is in compliance with the terms and conditions specified in a biological opinion is not considered a prohibited taking under Section 9. 16 U.S.C. § 1536(o)(2).

In addition, action agencies, such as the Forest Service must ensure their own compliance with the ESA; an action agency "cannot abrogate its responsibility to ensure that its actions will not jeopardize a listed species" merely by relying upon a Biological Opinion, concurrence, or other consultation document issued by the USFWS. Pyramid Lake Paiute Tribe v. U.S. Dep't of Navy, 898 F.2d 1410, 1415 (9th Cir. 1990).

GENERAL ENDANGERED SPECIES ACT VIOLATIONS

FAILURE TO ADEQUATELY PROTECT CHIRICAHUA LEOPARD FROG AND ITS CRITICAL HABITAT

Permitted cattle grazing has significantly damaged designated CLF Critical Habitat in the Coronado National Forest, with cattle removing vegetation and defecating in ponds that the frogs depend on for their survival. Center (2020) found nearly all were designated critical breeding ponds were significantly impacted by cows and their feces.

Many aquatic ecosystems specifically set aside to recover an imperiled frog were so significantly trampled and polluted by cattle that their function as breeding habitat is diminished. Designated riparian Critical Habitat is not being adequately protected as the Coronado National Forest, with USFWS concurrence, manages the designated riparian Critical Habitat by a scheme based on the use of cow grazing utilization metrics that do not protect riparian dependent endangered species to govern habitat conditions. In addition, Coronado has avoided providing protective Critical Habitat riparian exclosures for Chiricahua Leopard Frog.

The few isolated exceptions show that it is possible to maintain, improve and recover wetland ecosystems that support Chiricahua Leopard Frogs, but only if cattle are kept out of these areas.

USFWS, in its 2007, CLF Recovery Plan, acknowledges that degradation of CLF habitat is a known threat, along with invasive species and the fungus, *Batrachochytrium dendrobatidis* or "Bd":

> "Documented threats to the Chiricahua leopard frog were described in the final listing rule as they pertain to the five listing factors of the ESA (67 FR 40790) and are expanded upon herein. The five listing factors discussed in that rule include: A) the present or threatened destruction, modification, or curtailment of its habitat or range; B) overutilization for commercial, recreational, scientific, or educational purposes; C) disease or predation; D) the inadequacy of existing regulatory mechanisms; and E) other natural or manmade factors affecting its continued existence. Of these, threats associated with factor C are the most important to the Chiricahua leopard frog, including predation by non-native organisms, especially American bullfrogs, fish, and crayfish, and an often lethal, apparently introduced fungal disease (chytridiomycosis). Also of importance are degradation and loss of habitat as a result of water diversions and groundwater pumping, livestock management that degrades frog habitat…"[237]

USFWS defined "'poor' livestock management" in its March 20, 2012, Final Rule to designate Critical Habitat:

> "We consider poor livestock management to mean grazing conducted in a manner not in accordance with approved allotment management plans or otherwise considered adverse to maintaining natural habitat characteristics."[238]

In its March 20, 2012, Final Rule to Designate Critical Habitat, USFWS says:

> "Chiricahua leopard frogs are fairly tolerant of variations in water quality, but likely do not persist in waters severely polluted with cattle feces."[239] …
>
> "We understand that in most circumstances where frogs occur in tanks actively used by livestock, livestock feces are likely present in the water, and frogs are not appreciably affected by their presence. We also acknowledge the potential that in tanks that have limited water and are subjected to intense livestock activity, adverse affects to the Chiricahua leopard frog are likely from concentrated amounts of livestock feces, which could limit a population's persistence … we are not requiring ranchers to manage their livestock tanks specifically with this factor in mind…"[240]

Center (2020) documents numerous instances of feces-polluted water. As an example, Los Posos Gulch Tank on the Oak Tree Allotment on the Coronado National Forest Nogales Ranger District was once thought to be a robust breeding site but has not had frogs since 2009.[241]

---

[237] Chiricahua Leopard Frog (*Rana chiricahuensis*) Final Recovery Plan, U.S. Fish and Wildlife Service, April 2007, page 19.

[238] Listing and Designation of Critical Habitat for the Chiricahua Leopard Frog, Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register, Vol. 77, No. 54, March 20, 2012, page 16328.

[239] Ibid.

[240] Ibid.

[241] Correspondence to Coronado National Forest Supervisor Kerwin Dewberry, from USFWS Arizona Field Supervisor Steven L. Spangle; RE: impacts that may result from the proposed Coronado National Forest (CNF) Revised Land and Resource Management Plan (LRMP) located in Cochise, Graham,

Primary Constituent Elements ("PCEs") are the elements of physical or biological features that together provide for a species' life history processes and are essential to the conservation and recovery of CLF.[242]

As an example of the loss of these PCEs, please note the following images of Los Posos Gulch Tank on the Coronado National Forest Nogales Ranger District Oak Tree allotment. Even though designated as Critical Habitat, except for the presence of water, the PCEs have been destroyed by cows:



Grazed Chiricahua Leopard Frog Critical Habitat breeding pond at Los Posos, Oak Tree Allotment, Coronado National Forest Nogales Ranger District. 31.76846, -110.73159, September 1, 2020.

According to the April 13, 2017, USFWS' Biological Opinion on the Coronado National Forest Land Management Plan,

> "The purpose of the designation of Critical Habitat is to conserve the PCEs essential to the conservation of the species through the identification of the appropriate quantity and spatial arrangement of the PCEs sufficient to support the life-history functions of the species….Each of the areas designated as Critical Habitat have been determined to contain sufficient PCEs, or with reasonable effort, PCEs can be restored to provide for one or more of the life-history functions of the Chiricahua leopard frog."[243]

The 2021 Biological Opinion does not even attempt to protect the designated riparian Critical Habitat necessary for CLF survival and recovery. Instead, it relies on a scheme intentionally designed to be ineffectual and to prevent focusing on the cow grazing that is destroying Critical Habitat. The 2021 Biological Opinion does not use identifiable and measurable habitat conditions as a surrogate for take as USFWS has consistently done in the past.[244] In the 2021 Biological Opinion, USFWS has set up a system whereby take can only be established when a

---

Pima, Pinal, and Santa Cruz Counties, Arizona, and Hidalgo County, New Mexico; AESO/SE 02EAAZ00-2015-F-0347, R2/TE 2012-F-0005, R2/TE 2-22-03-F-366, Region 2/ES/SE-000087RO, April 13, 2017, page 165.

[242] Listing and Designation of Critical Habitat for the Chiricahua Leopard Frog, Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register, Vol. 77, No. 54, March 20, 2012, pages 16340 and 16343.

[243] Correspondence to Coronado National Forest Supervisor Kerwin Dewberry, from USFWS Arizona Field Supervisor Steven L. Spangle; RE: impacts that may result from the proposed Coronado National Forest (CNF) Revised Land and Resource Management Plan (LRMP) located in Cochise, Graham, Pima, Pinal, and Santa Cruz Counties, Arizona, and Hidalgo County, New Mexico; AESO/SE 02EAAZ00-2015-F-0347, R2/TE 2012-F-0005, R2/TE 2-22-03-F-366, Region 2/ES/SE-000087RO, April 13, 2017, page 73.

[244] For example: Correspondence to Apache-Sitgreaves National Forests Supervisor Steve Best, from USFWS Arizona Field Supervisor Steven L. Spangle, RE: for ongoing livestock grazing and effects to seven listed species and proposed and designated critical habitat under the Wildbunch Allotment Management Plan (AMP) on the Clifton Ranger District, Apache-Sitgreaves National Forests, AESO/SE 02EAAZ00-20 l 5-F-0849, February 2, 2017.; Correspondence to Lincoln National Forest Supervisor Travis G. Moseley from USFWS New Mexico Field Supervisor, RE: the continuation of livestock grazing on the Sacramento and Dry Canyon Allotments; # 02ENNM00-2016-F-0440-R001, October 5, 2018.

population that is being artificially augmented[245] disappears for "two consecutive years."[246] Obviously then, as long as Arizona Game and Fish Department artificially augments the CLF populations on the grazing allotments covered by the 2021 Biological Opinion, no matter the deteriorating Critical Habitat condition, Incidental Take is difficult (if not impossible) to exceed, thereby rendering the trigger for reinitiation essentially useless. This is a blatant attempt at "cooking the books" or covering up the detrimental effects of grazing, rather than engaging in an impartial evaluation of the effects of the authorization of grazing on the Coronado National Forest.

Contrast this inadequate protection and illegal[247] scheme with other grazing Biological Opinions that actually afford meaningful protection. For example, USFWS provides for a habitat surrogate for determining when authorized take has been exceeded for New Mexico Meadow Jumping Mouse "using suitable habitat within exclosures… as well as riparian and upland habitat outside of exclosures as a surrogate for determining when the authorized take has been exceeded."[248] Or as another example, USFWS provides for Loach Minnow and Spikedace protection by defining "incidental take in terms of habitat conditions, and uses surrogate measures to identify when take has been exceeded.[249] The failure to adopt similar habitat conditions as a proxy for measuring incidental take – to provide a clear trigger for reinitiation of consultation when take has been exceeded – not only violates the explicit provisions of the ESA, but also arbitrarily and capriciously fails to comport with USFWS' own well-established practice in connection with similar grazing authorizations in other national forests.

According to the new 2021 Coronado ITS statement, an entire CLF population and its breeding habitat could be affected or even wiped out for a year in any (or all) EMA(s), without even triggering take. This ITS therefore is arbitrary and capricious, and violates the Administrative Procedure Act[250] based on previous agency recommendations to promote CLF recovery.

---

[245] Public Records response, from Arizona Game and Fish Department, to Center for Biological Diversity, November 19, 2020, Public Records request, responsive to request for (1) releases and translocations, and (2) survey results; January 6, 2021.

[246] 2021 Biological Opinion, page 98.

[247] 16 U.S.C. § 1536(a)(2).; *Center for Biological Diversity v.* BLM, 698 F.3d 1101, 1115 (9th Cir. 2012).; 50 C.F.R. 402.14(i)(1)(i); *Miccosukee Tribe of Indians of Fla. v. United States*, 566 F.3d 1257, 1275 (11th Cir. 2009).; *Center for Biological Diversity, et al., v. Donald H. Rumsfeld, Secretary of Defense, et al*., CIV99-203 TUC ACM, *198 F. Supp. 2d 1139; 2002 U.S. Dist LEXIS 7419; 54 ERC (BNA) 1391; 32 ELR 20640*; April 8, 2002, finding: "Mitigation measures must be reasonably specific, certain to occur, and capable of implementation; they must be subject to deadlines or otherwise-enforceable obligations; and most important, they must address the threats to the species in a way that satisfies the jeopardy and adverse modification standards."

[248] Correspondence to Lincoln National Forest Supervisor Travis G. Moseley from USFWS New Mexico Field Supervisor, RE: the continuation of livestock grazing on the Sacramento and Dry Canyon Allotments; # 02ENNM00-2016-F-0440-R001, October 5, 2018, page 99.

[249] Correspondence to Apache-Sitgreaves National Forests Supervisor Steve Best, from USFWS Arizona Field Supervisor Steven L. Spangle; RE: for ongoing livestock grazing and effects to seven listed species and proposed and designated critical habitat under the Wildbunch Allotment Management Plan (AMP) on the Clifton Ranger District, Apache-Sitgreaves National Forests, AESO/SE 02EAAZ00-20 l 5-F-0849, February 2, 2017, page 16.

[250] 5 USC §706(2)(A).

FAILURE TO ADEQUATELY PROTECT YELLOW-BILLED CUCKOO AND ITS CRITICAL HABITAT

Grazing has long been recognized as a detriment to the reproduction of riparian trees.[251,252,253,254,255,256,257,258,259,260] For example, cattle interfere directly with the cottonwood tree's life cycle, and thus cattle presence can directly preclude cottonwood recruitment and forest regeneration.[261,262,263,264] Such impacts of cattle grazing on riparian vegetation are magnified in arid and semi-arid regions[265,266] and are one of the main causes of Yellow-billed Cuckoo declines.[267]

Cattle impacts are often most severe in riparian areas because available water, shade and forage causes cattle to congregate in riparian areas 5-30 times longer than in adjacent uplands.[268] Without mechanisms of riparian exclusion, cattle degrade riparian conditions by removing vegetation, preventing tree establishment, compacting

[251] Crouch, G.L., 1979. Long-term changes in cottonwoods on a grazed and an ungrazed plains bottomland in northeastern Colorado (Vol. 370). US Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station.

[252] Glinski, R.L., 1977, July. Regeneration and distribution of sycamore and cottonwood trees along Sonoita Creek, Santa Cruz County, Arizona. In Johnson, RR, and Jones, DA, tech. coords. Importance, preservation and management of riparian habitat: a symposium. Gen. Tech. Rep. RM-43. Fort Collins, CO: US Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station (pp. 116-123).

[253] Klebenow, D.A. and Oakleaf, R.J., 1984. Historical avifaunal changes in the riparian zone of the Truckee River.

[254] Stromberg, J.C., 1993. Fremont cottonwood-Goodding willow riparian forests: a review of their ecology, threats, and recovery potential. Journal of the Arizona-Nevada Academy of Science, pp.97-110.

[255] Carothers, S.W., 1977. Importance, preservation, and management of riparian habitats: an overview. In *Importance, preservation, and management of riparian habitats: a symposium. USDA Forest Service General Technical Report RM-43* (pp. 2-4).

[256] Rucks, M.G., 1984. Composition and trend of riparian vegetation on five perennial streams in southeastern Arizona. In *California Riparian Systems* (pp. 97-108). University of California Press.

[257] Fleischner, T.L., 1994. Ecological costs of livestock grazing in western North America. *Conservation biology*, *8*(3), pp.629-644.

[258] Kauffman, J.B., Krueger, W.C. and Vavra, M., 1983. Effects of late season cattle grazing on riparian plant communities. *Rangeland Ecology & Management/Journal of Range Management Archives*, *36*(6), pp.685-691.

[259] Carothers, S.W., 1977, July. Importance, preservation, and management of riparian habitats: an overview. In *Importance, preservation, and management of riparian habitats: a symposium. USDA Forest Service General Technical Report RM-43* (pp. 2-4).

[260] Ames, C.R., 1977. in Riparian Management: Grazing'. In *Importance, Preservation and Management of Riparian Habitat: A Symposium, Tucson, Arizona, July 9, 1977* (Vol. 43, p. 49). Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station.

[261] Ames, C.R., 1977. in Riparian Management: Grazing'. In *Importance, Preservation and Management of Riparian Habitat: A Symposium, Tucson, Arizona, July 9, 1977* (Vol. 43, p. 49). Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station.

[262] Glinski, R.L., 1977, July. Regeneration and distribution of sycamore and cottonwood trees along Sonoita Creek, Santa Cruz County, Arizona. In Johnson, RR, and Jones, DA, tech. coords. Importance, preservation and management of riparian habitat: a symposium. Gen. Tech. Rep. RM-43. Fort Collins, CO: US Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station (pp. 116-123).

[263] Kalischuk, A.R., Rood, S.B. and Mahoney, J.M., 2001. Environmental influences on seedling growth of cottonwood species following a major flood. *Forest Ecology and Management*, *144*(1-3), pp.75-89.

[264] Stromberg, J.C., 1997. Growth and survivorship of Fremont cottonwood, Goodding willow, and salt cedar seedlings after large floods in central Arizona. *The Great Basin Naturalist*, pp.198-208.

[265] Raleigh, R.F., 1979. Grazing and the riparian zone: Impact and management perspectives. In Strategies for Protection and Management of Floodplain Wetlands and Other Riparian Ecosystems: Proceedings of the Symposium, December 11-13, 1978, Callaway Gardens, Georgia (No. 12, p. 263). Department of Agriculture, Forest Service.

[266] Fleischner, T.L., 1994. Ecological costs of livestock grazing in western North America. Conservation biology, 8(3), pp.629-644.

[267] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register Vol. 86, No. 75, Wednesday, April 21, 2021.

[268] Skovlin, J.M. 1984. Impacts of grazing on wetlands and riparian habitat: a review of our knowledge. p. 1001-1103. In: Developing strategies for range management. Westview Press, Boulder,CO.

soil, increasing surface runoff, and reducing water infiltration and bank stability.[269,270,271,272,273] In combination, such landscape alterations can eliminate riparian plant communities and can prevent their regeneration.[274,275,276,277] Riparian zones suffering from long-term grazing effects are more susceptible to extreme flooding events resulting in accelerated rates of channel incision and a lack of sedimentation required to support sprouting trees.[278]

Many bird species associated with mature cottonwood trees are rare or endangered in the Southwest.[279,280] Yellow-billed Cuckoo have disappeared throughout most of its former range due to habitat loss.[281,282] Southeastern Arizona now represents one of the strongholds for this declining species. For example,

> "The cuckoo is now very rare in scattered drainages in western Colorado, Idaho, Nevada, and Utah, with single, nonbreeding birds most likely to occur (79 FR 48548, 79 FR 59992). The largest remaining breeding areas are in southern and central California, Arizona, along the Rio Grande in New Mexico, and in northwestern Mexico (79 FR 59992). In Arizona, the species was a common resident in the (chiefly lower) Sonoran zones of southern, central, and western Arizona; scarce in the north-central part of the state; and very rare in the northeast (Phillips et al. 1964). In Arizona, the cuckoo now nests primarily in the central and southern parts of the state."[283]

According to USFWS,

> "the primary threat to the cuckoo is loss or fragmentation of high-quality riparian habitat suitable for nesting (USFWS 2014a, b). Habitat loss and degradation results from several

[269] Fleischner, T.L., 1994. Ecological costs of livestock grazing in western North America. Conservation biology, 8(3), pp.629-644.

[270] Klebenow, D.A. and Oakleaf, R.J., 1984. Historical avifaunal changes in the riparian zone of the Truckee River.

[271] Reichenbacher, F.W., 1984. Ecology and evolution of southwestern riparian plant communities [The relationship between the distributions of plants in the floodplain and a set of physical site factors, Trout Creek, Mohave County Arizona; USA]. Desert Plants.

[272] Stromberg, J.C., 1993. Fremont cottonwood-Goodding willow riparian forests: a review of their ecology, threats, and recovery potential. Journal of the Arizona-Nevada Academy of Science, pp.97-110.

[273] Taylor, D. M., and C. D. Littlefield. 1986. Willow flycatcher and yellow warbler response to cattle grazing. American Birds 40:1169-1173.

[274] Dreesen, D., Harrington, J., Subirge, T., Stewart, P. and Fenchel, G., 2002. Riparian restoration in the Southwest: species selection, propagation, planting methods, and case studies. In: Dumroese, RK; Riley, LE; Landis, TD, technical coordinators. National proceedings: forest and conservation nursery associations-1999, 2000, and 2001. Proceedings RMRS-P-24. Ogden, UT: US Department of Agriculture Forest Service, Rocky Mountain Research Station. p. 253-272, 24.

[275] Stromberg, J.C., 1993. Fremont cottonwood-Goodding willow riparian forests: a review of their ecology, threats, and recovery potential. Journal of the Arizona-Nevada Academy of Science, pp.97-110.

[276] Fleischner, T.L., 1994. Ecological costs of livestock grazing in western North America. Conservation biology, 8(3), pp.629-644.

[277] Bock, Carl E., Victoria A. Saab, Terrell D. Rich, and David S. Dobkin. "Effects of livestock grazing on neotropical migratory landbirds in western North America." In: Finch, Deborah M.; Stangel, Peter W.(eds.). Status and management of neotropical migratory birds: September 21-25, 1992, Estes Park, Colorado. Gen. Tech. Rep. RM-229. Fort Collins, Colo.: Rocky Mountain Forest and Range Experiment Station, US Dept. of Agriculture, Forest Service: 296-309 229 (1993): 296-309.

[278] Stromberg, J.C., 1993. Fremont cottonwood-Goodding willow riparian forests: a review of their ecology, threats, and recovery potential. Journal of the Arizona-Nevada Academy of Science, pp.97-110.

[279] Carriony, N.B. and Turner, R.M., 1977. Inventory of Riparian Habitats'. In Importance, Preservation, and Management of Riparian Habitat: A Symposium, Tucson, Arizona, July 9, 1977 (Vol. 43). Rocky Mountain Forest and Range Experiment Station, Forest Service, US Department of Agriculture.

[280] Engel-Wilson, R.W. and Ohmart, R.D., 1978. Floral and Attendant Faunal Changes on the Lower Rio Grande Between Fort Quitman and Presidio, Texas.

[281] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register Vol. 86, No. 75, Wednesday, April 21, 2021.

[282] Biological Opinion on Ongoing Grazing on the Coronado National Forest, Graham, Cochise, Pima, Pinal, and Santa Cruz Counties, Arizona and Hidalgo County, New Mexico. AESO/SE, 2-21-98-F-399, 2-21-98-F-399R1, 02EAAZ00-2019-F-0867, September 30, 2021, p. 174.

[283] Diebolt, S., Chief, A.B. and Diebolt, D.M., 2018. Fish and Wildlife Service Arizona Ecological Services Office.

> interrelated factors, including alteration of flows in rivers and streams, mining, encroachment into suitable habitat from agricultural and other development activities on breeding and wintering grounds, stream channelization and stabilization, diversion of surface and ground water for agricultural and municipal purposes, livestock grazing, wildfire, establishment of nonnative vegetation, drought, and prey scarcity due to pesticides."[284]

Also, according to USFWS,

> "reduction in riparian habitat (including mesquite bosques) in Arizona has been well documented and western yellow-billed cuckoos are no longer found in areas where riparian habitat no longer exists. Yet, remaining habitat within Arizona remains an important stronghold for breeding western yellow-billed cuckoos. As part of the core of the DPS, habitat in Arizona needs to be conserved to enable western yellow-billed cuckoos to produce young that may eventually disperse to other parts of the DPS's range."[285]

We've established that Yellow-billed Cuckoo are in decline due to "well documented" habitat loss, that cattle preclude regeneration of cuckoo habitat (which is well documented in the scientific literature), and that cuckoo habitat in AZ "needs to be conserved".[286]

Yellow-billed Cuckoo require multi-aged and multi-height forests for breeding and foraging, or alternatively patches of overstory trees and/or young riparian trees adjacent to mesquite terraces.[287] Vegetative structure and cover must be diverse and varied.[288] Yellow-billed Cuckoo often nest where young trees interface with more mature trees, such as along the scour zone of rivers or newly planted revegetation sites.[289] Humid and cooler conditions created by surface and subsurface moisture and trapped by the multilayered canopy appear to be important habitat parameters for the Yellow-billed Cuckoo.[290] In southeastern AZ, Yellow-billed Cuckoo are known to breed in ephemeral and intermittent drainages as well, as they do in Sonora.[291] These breeding habitats are composed of more xeroriparian trees like oak, sycamore, hackberry, juniper, ash, walnut, and desert willow. Elevated humidity is especially important in southeastern Arizona, where Yellow-billed Cuckoo breed in intermittent and ephemeral drainages.[292] According to USFWS in their 2021 final determination of critical habitat "As described in the Critical Habitat section, features such as understory and overstory components with high humidity are considered important for habitat selection for breeding Yellow-billed Cuckoo. This is especially true in ephemeral, tree-lined xeroriparian drainages."[293]

---

[284] Biological Opinion on Ongoing Grazing on the Coronado National Forest, Graham, Cochise, Pima, Pinal, and Santa Cruz Counties, Arizona and Hidalgo County, New Mexico. AESO/SE, 2-21-98-F-399, 2-21-98-F-399R1, 02EAAZ00-2019-F-0867, September 30, 2021, p. 174.

[285] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register Vol. 86, No. 75, Wednesday, April 21, 2021, page 20813.

[286] Id.

[287] Ibid., page 20839.

[288] Ibid., page 20842.

[289] The December 4, 2017, Biological Opinion for Catalina-Rincon FireScape Project, AESO/SE 02EAAZ00-2016-F-0773, p. 49.

[290] Id.

[291] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register Vol. 86, No. 75, Wednesday, April 21, 2021, page 20836.

[292] Ibid., page 20940.

[293] Ibid., page 20815.

Ephemeral drainages are hot spots of productivity with proportionally higher moisture content, higher vegetation volume and diversity, and higher associated wildlife abundance than surrounding uplands.[294, 295, 296] Ephemeral and intermittent drainages have high conservation value and provide the same ecological and hydrological functions as perennial streams.[297] Special management of ephemeral drainages is needed to prevent degradation from increasing aridity.[298, 299, 300] Much like perennial streams, xeroriparian drainages can experience reduced vigor, reduced regeneration, and reduced survival of young trees with chronic grazing pressure.[301] Chronic grazing will remove riparian seedlings and saplings, largely eliminating the youngest age class from developing into future riparian gallery forest. Cattle consumption of grass and other herbaceous plants in riparian drainages also quickly reduces herbaceous cover important for temperature amelioration, humidity, and insect production.[302, 303] Grazing exacerbates climate change impacts and aridification and converts mesic riparian vegetation to a more xeric condition, thereby having a disproportionally negative effect on grass abundance.[304] Over time, sustained grazing pressure concurrent with unprecedented drought will result in a decline in Yellow-billed Cuckoo habitat.

According to USFWS, "where tree regeneration and survival are lacking, suitable cuckoo habitat may cease to exist or may support fewer cuckoos when mature trees die."[305] In addition, "humidity, important for prey production and cuckoo nesting in southeastern Arizona, will decline and temperature and evapotranspiration will increase as habitat declines and fragmentation increases. These factors may reach a threshold in which cuckoos may no longer breed or may breed in reduced densities in some reaches."[306]

---

[294] Levick, L., J. Fonseca, D. Goodrich, M. Hernandez, D. Semmens, J. Stromberg, R. Leidy, M. Scianni, D. P. Guertin, M. Tluczek, and W. Kepner. 2008. The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the Arid and Semi-arid American Southwest. U.S. Environmental Protection Agency and USDA/ARS Southwest Watershed Research Center, EPA/600/R-08/134, ARS/233046, 116 pp.

[295] Stromberg, J.C., Setaro, D.L., Gallo, E.L., Lohse, K.A. and Meixner, T., 2017. Riparian vegetation of ephemeral streams. *Journal of Arid Environments*, *138*, pp.27-37.

[296] Búrquez, A., Martínez-Yrízar, A., Núñez, S., Quintero, T. and Aparicio, A., 2010. Aboveground biomass in three Sonoran Desert communities: Variability within and among sites using replicated plot harvesting. *Journal of Arid Environments*, *74*(10), pp.1240-1247.

[297] Levick, L., J. Fonseca, D. Goodrich, M. Hernandez, D. Semmens, J. Stromberg, R. Leidy, M. Scianni, D. P. Guertin, M. Tluczek, and W. Kepner. 2008. The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the Arid and Semi-arid American Southwest. U.S. Environmental Protection Agency and USDA/ARS Southwest Watershed Research Center, EPA/600/R-08/134, ARS/233046, 116 pp.

[298] Beschta, R.L., Donahue, D.L., DellaSala, D.A., Rhodes, J.J., Karr, J.R., O'Brien, M.H., Fleischner, T.L. and Williams, C.D., 2013. Adapting to climate change on western public lands: addressing the ecological effects of domestic, wild, and feral ungulates. Environmental Management, 51(2), pp.474-491.

[299] Stromberg, J.C., Setaro, D.L., Gallo, E.L., Lohse, K.A. and Meixner, T., 2017. Riparian vegetation of ephemeral streams. *Journal of Arid Environments*, *138*, pp.27-37.

[300] Levick, L., J. Fonseca, D. Goodrich, M. Hernandez, D. Semmens, J. Stromberg, R. Leidy, M. Scianni, D. P. Guertin, M. Tluczek, and W. Kepner. 2008. The Ecological and Hydrological Significance of Ephemeral and Intermittent Streams in the Arid and Semi-arid American Southwest. U.S. Environmental Protection Agency and USDA/ARS Southwest Watershed Research Center, EPA/600/R-08/134, ARS/233046, 116 pp.

[301] Id.

[302] Skovlin, J.M. 1984. Impacts of grazing on wetlands and riparian habitat: a review of our knowledge. p. 1001-1103. In: Developing strategies for range management. Westview Press, Boulder,CO.

[303] Krueper, D.J., 1996. Effects of livestock management on Southwestern riparian ecosystems. Shaw, DW, and Finch, DM, tech. coords. Desired future conditions for southwestern riparian ecosystems: bringing interests and concerns together. Gen. Tech. Rep. RM-GTR-272. Fort Collins, CO: US Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, pp.281-301.

[304] Stromberg, J.C., Setaro, D.L., Gallo, E.L., Lohse, K.A. and Meixner, T., 2017. Riparian vegetation of ephemeral streams. *Journal of Arid Environments*, *138*, pp.27-37.

[305] April 28, 2016, Amended Final Reinitiated Biological and Conference Opinion for the Rosemont Copper Mine, Pima County, Arizona, p. 244.

[306] Id.

Putting this into context, it has been estimated that within the past one hundred years, 95 percent of riparian habitat in the West has been destroyed[307] and this destruction is ongoing. The reality of this trend is alarming and has been expressed in recent Biological Opinions for other nearby projects. For example,

> "WestLand Resources, Inc. (2011) observed disturbance to riparian vegetation due to livestock or recreational activities (mainly Off-Highway-Vehicle use) at 100 percent of the 70 sampling points in a study on riparian vegetation in lower Barrel and Davidson canyons. These impacts are independent of the proposed action and are not included in our analyses of effects of the action, but they raise concern about the future condition of cuckoo habitat within Davidson Canyon if disturbance from livestock and recreational activities are not controlled."[308]

Likewise, the images of widespread livestock disturbances presented in this NOI should raise concern about widespread destruction and future condition of Yellow-billed Cuckoo habitat, especially in the Coronado. According to USFWS, "if an area with grazing activity degrades riparian habitat attributes and prevents long-term health and persistence of these systems, it is considered overgrazing."[309] In another example, USFWS defines overgrazing as grazing activities that reduce quality and quantity of breeding habitat.[310] USFWS identified "overgrazing in riparian (including xeroriparian) habitat as an ongoing threat to western yellow-billed cuckoo habitat that may require special management" and "where water is limited and recruitment events are infrequent, grazing at any level can impact riparian habitat."[311] Yellow-billed Cuckoo usually occupy wider, shallower portions of drainages with gradually sloped walls rather than the steeper narrower portions of the canyons.[312] These are also areas that are more accessible and attractive to cattle, necessitating the need for cattle exclosures.

Full exclusion is required to sustain and promote Yellow-billed Cuckoo habitat. It is also the best way to mitigate for climate change and aridification. Seedlings of cottonwood, willow, and other riparian trees tend to recover rapidly after exclusion of livestock grazing.[313,314,315] Removal of cattle grazing has been correlated with dramatic increases in dense willow thickets, necessary for Yellow-billed Cuckoo and other riparian species.[316,317,318] For example, in a comparison of perennial streams in Arizona including the Gila River, the San Francisco River, Bonita Creek, Mescal Creek and Aravaipa Creek, only Aravaipa Creek had been excluded from cattle (since 1973)

---

[307] Krueper, D.J., 1996. Effects of livestock management on Southwestern riparian ecosystems. *Shaw, DW, and Finch, DM, tech. coords. Desired future conditions for southwestern riparian ecosystems: bringing interests and concerns together. Gen. Tech. Rep. RM-GTR-272. Fort Collins, CO: US Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station*, pp.281-301.

[308] April 28, 2016, Amended Final Reinitiated Biological and Conference Opinion for the Rosemont Copper Mine, Pima County, Arizona, p. 233.

[309] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register Vol. 86, No. 75, Wednesday, April 21, 2021, page 20808.

[310] Ibid., page 20853.

[311] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register Vol. 86, No. 75, Wednesday, April 21, 2021.

[312] The December 4, 2017, Biological Opinion for Catalina-Rincon FireScape Project, AESO/SE 02EAAZ00-2016-F-0773, p. 57.

[313] Stromberg, J.C., 1993. Fremont cottonwood-Goodding willow riparian forests: a review of their ecology, threats, and recovery potential. Journal of the Arizona-Nevada Academy of Science, pp.97-110.

[314] Smith, J.J., 1990. Recovery Of Riparian Vegetation on An Intermittent Stream Following Removal of Cattle. In California Riparian Systems Conference, p. 217.

[315] Rucks, M.G., 1984. Composition and trend of riparian vegetation on five perennial streams in southeastern Arizona. In California Riparian Systems (pp. 97-108). University of California Press.

[316] Cannon, R.W. and Knopf, F.L., 1984. Species composition of a willow community relative to seasonal grazing histories in Colorado. *The Southwestern Naturalist*, *29*(2), pp.234-237.

[317] Klebenow, D.A. and Oakleaf, R.J., 1984. Historical avifaunal changes in the riparian zone of the Truckee River.

[318] Taylor, D. M., and C. D. Littlefield. 1986. Willow flycatcher and yellow warbler response to cattle grazing. American Birds 40:1169-1173.

and was the only area with a dominant broadleaf riparian community and the only site that showed a trend towards maintenance of the riparian vegetative community.[319]

In another study in central California,

> "prior to removal of cattle in 1983, plots contained mature sycamores, one young sycamore, and five willows. By 1985, over 320 willows 16 sycamores and 1 cottonwood *Populus fremontii* had appeared and basal sprouts had developed on the mature sycamores. Young willows and sycamores grew slowly and establishment and growth generally ceased as surface flows disappeared. Because of slow growth at the sites a significant willow corridor is probably only possible in the absence of cattle browsing."[320]

Elimination of grazing in Little Ash Creek in Arizona quickly resulted in changes in tree size distribution, with many more younger cottonwoods on the ungrazed site as well as some stand reproduction.[321] In another local example in Pima County's Cienega Creek, USFWS explains what happens when grazing threats are removed:

> "Response to Removal of Cattle Grazing on Empire Cienega and Cienega Creek.
>
> Prior to the establishment of the Pima County CCNP there was extensive cattle grazing on the site, but once cattle were removed from the system, vegetation height and volume increased significantly and likely plateaued in the early 2000s (unpublished data). Vegetation often responds positively to removal of cattle (Krueper et al. 2003), but since 2005 there has only been a slight increase in the extent of cottonwood canopies in the Pima County CCNP, though this analysis does not address the density of vegetation within the canopy. The extent and vigor of mesquite trees has declined since 2005. Removal of cattle grazing has resulted in increased vegetation in Empire Cienega and Upper Cienega Creek (M. Radke, pers. comm. January 27, 2016). Although effects of the drought are evident throughout Upper Cienega Creek, pockets of hydroriparian habitat continue to improve in suitability for both cuckoos and willow flycatchers."[322]

When discussing Yellow-billed Cuckoo mitigation efforts for other proposed projects on the Coronado National Forest, USFWS explains that "the property will be enhanced and managed to benefit cuckoos by fencing the perimeter to exclude grazing", and "xeroriparian habitat recovery is expected after fencing to exclude grazing"[323] Here the Service acknowledges that grazing precludes meaningful protection of remaining Yellow-billed Cuckoo habitat.

USFWS states in the 2021 Biological Opinion that grazing impacts to recruitment "are likely to be occasional and difficult to quantify" and "aforementioned effects to existing riparian vegetation and recruitment,

---

[319] Rucks, M.G., 1984. Composition and trend of riparian vegetation on five perennial streams in southeastern Arizona. In California Riparian Systems (pp. 97-108). University of California Press.

[320] Smith, J.J., 1990. Recovery Of Riparian Vegetation on An Intermittent Stream Following Removal of Cattle. In California Riparian Systems Conference, p. 217.

[321] Szaro, R.C. and Pase, C.P., 1983. Short-term changes in a cottonwood-ash-willow association on a grazed and an ungrazed portion of Little Ash Creek in central Arizona *Populus fremontii*, velvet ash, *Fraxinus velutina*, Goodding willow, *Salix gooddingii*. Rangeland Ecology & Management/Journal of Range Management Archives, 36(3), pp.382-384.

[322] April 28, 2016, Amended Final Reinitiated Biological and Conference Opinion for the Rosemont Copper Mine, Pima County, Arizona, p. 235.

[323] Ibid., page 248.

however, do not appear to be appreciably affecting yellow-billed cuckoo occupancy of the action area."[324] But the "analysis of consistent yellow-billed cuckoo occupancy…" is dependent on data collection that ended in 2017. Contradictory to the discussion provided above, the following is the new ITS from the 2021 Biological Opinion on Ongoing Grazing on the Coronado National Forest:

> "We do not anticipate the incidental take of yellow-billed cuckoos from livestock grazing on the Forest based on the analysis of consistent yellow-billed cuckoo occupancy across survey sites in areas subject to various current grazing practices, including non-use by livestock over varying spatial and temporal scales (see Effects of the Action, above).
>
> EFFECT OF THE TAKE
> In the accompanying Biological Opinion, we have determined that no incidental take of yellow-billed cuckoos is reasonably certain to occur."[325]

This ITS is arbitrary and capricious. It doesn't take into account any of the habitat requirements for Yellow-billed Cuckoo discussed elsewhere in the 2021 Biological Opinion and others, nor does it incorporate how those habitat requirements are impacted by authorized grazing. It is dependent on data collection that ended in 2017, which fails to account for the following four years of drought and cow grazing. New information presented in this Notice presents a significantly different picture of the habitat effects of grazing in Yellow-billed Cuckoo critical habitat, especially in drought years. The USFS and USFWS were made aware of our 2021 Yellow-billed Cuckoo surveys prior to developing this ITS but chose to disregard that new information.

USFWS even proposes an erroneous conclusion, based on a review of the grazing studies by Milchunas (2006), that "livestock grazing has little negative or positive effect on the proportion of mesquite and associated shrubs and forbs - and therefore cuckoo habitat - in xeroriparian and upland areas."[326] First, 'xeroriparian' isn't mentioned in this publication. Second, below is a more accurate description of grazing impacts to Arizona riparian zones given by Milchunas (2006):

> "Only one other study assessed both understory and overstory vegetation responses to protection from grazing, and this study included three replicates along Trout Creek in Arizona (Reichenbacher 1984). The ungrazed treatments were geologic refuges formed by granite rubble, making this unique for riparian grazing studies. Reichenbacher describes the pristine ungrazed sites as "remarkable riparian luxuriance" unlike anywhere along the grazed stretches of the river. Understory species composition was drastically different between grazing treatments (Table 18). Ungrazed sites had dense stands of American bulrush, cattail, sweet clover, and tree saplings, while grazed sites were dominated by the shrubby, opportunistic seepwillow. Total vegetative cover was nearly three-times greater, and density nearly seven times greater, on ungrazed compared to grazed areas. Diversity (calculated as H', which incorporates both richness and evenness components of diversity) was nearly three-times greater in ungrazed compared to grazed sites (2.83 vs. 1.0, respectively). The high density of trees in ungrazed refuges was due to large numbers of seedlings and saplings."[327]

---

[324] Biological Opinion on Ongoing Grazing on the Coronado National Forest, Graham, Cochise, Pima, Pinal, and Santa Cruz Counties, Arizona and Hidalgo County, New Mexico. AESO/SE, 2-21-98-F-399, 2-21-98-F-399R1, 02EAAZ00-2019-F-0867, September 30, 2021, p. 185.

[325] Ibid., page 189.

[326] Ibid,, page 182.

[327] Milchunas, D.G. 2006. Responses of plant communities to grazing in the southwestern United States. Gen. Tech. Rep. RMRS-GTR-169. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 126 p.

The 2021 Biological Opinion goes on to state:

> "it is our biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the cuckoo or to destroy or adversely modify the species' designated critical habitat. We base this conclusion on the fact that the cuckoo is currently widespread throughout its range and in the action area, where ongoing livestock grazing has occurred for many decades and continues."[328]

This conclusion is arbitrary and capricious. More accurately stated, livestock grazing has occurred for many decades and continues,[329] and presently Yellow-billed Cuckoo are listed under the ESA, due primarily to habitat loss,[330] and are rare throughout their range.[331] As stated in the April 28, 2016, Biological Opinion for Rosemont Mine, USFWS stated that data are insufficient to determine population trends for this species in the area[332] and that "[w]e also anticipate that climate change will degrade habitat to the point of being incapable of supporting the occurrence of yellow-billed cuckoos."[333]

In other recent Biological Opinions for the Coronado National Forest, a habitat proxy was proposed to determine "take" of Yellow-billed Cuckoo. For example, according to the ITS for Yellow-billed Cuckoo in the December 4, 2017 Biological Opinion for Catalina-Rincon FireScape Project:

> "it is not possible to determine specific numbers of affected birds. We therefore express the incidental take of western yellow-billed cuckoos in terms of affected riparian vegetation. The riparian vegetation within the action area is a valid surrogate for incidental take because, as discussed in the effects analysis above, western yellow-billed cuckoos have been documented within such reaches within the action area and riparian trees are required for breeding. Removal of vegetation within cuckoo riparian habitat is anticipated to adversely affect cuckoos, thus establishing a causal link between the effects of the proposed action, the surrogate measure of take (habitat), and the indeterminable number of cuckoos that will be incidentally taken."[334]

To not produce a similar or comparable ITS for Yellow-billed Cuckoo in the context of cattle grazing is inconsistent, defies logic and should be considered arbitrary and capricious.

On the Coronado, grazing impacts are measured using livestock forage standards with no ecological context.[335] Yet, according to a 2007 collaborative rangeland monitoring guide entitled '*Principles of obtaining and interpreting utilization data on rangelands'*, "some types of residual cover guidelines (e.g. "structure" requirements or visual obstruction estimates for upland bird nesting) are neither utilization nor stubble height measurements."[336]

---

[328] Biological Opinion on Ongoing Grazing on the Coronado National Forest, Graham, Cochise, Pima, Pinal, and Santa Cruz Counties, Arizona and Hidalgo County, New Mexico. AESO/SE, 2-21-98-F-399, 2-21-98-F-399R1, 02EAAZ00-2019-F-0867, September 30, 2021, p. 188.

[329] Id.

[330] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register Vol. 86, No. 75, Wednesday, April 21, 2021.

[331] Diebolt, S., Chief, A.B. and Diebolt, D.M., 2018. Fish and Wildlife Service Arizona Ecological Services Office.

[332] April 28, 2016, Amended Final Reinitiated Biological and Conference Opinion for the Rosemont Copper Mine, Pima County, Arizona.

[333] Ibid., page 242.

[334] The December 4, 2017, Biological Opinion for Catalina-Rincon FireScape Project, AESO/SE 02EAAZ00-2016-F-0773 p. 63.

[335] According to the Interagency Technical Reference (1999), utilization measures the proportion or degree of current year's forage production that is consumed or destroyed. Utilization may refer either to a single plant species, a group of species, or the vegetation as a whole.

[336] Smith, L., Ruyle, G.B., Maynard, J., Barker, S., Meyer, W., Stewart, D., Coulloudon, B., Williams, S. and Dyess, J., 2007. *Principles of obtaining and interpreting utilization data on rangelands*. University of Arizona, Cooperative Extension Serv.

In other words, structural habitat requirements for wildlife, including nesting birds like Yellow-billed Cuckoo, cannot be assessed or measured by utilization or stubble height measurements, according to rangeland experts.

There are many aspects of cattle grazing that utilization or stubble height measurement do not capture, including cattle use of preferentially selected and highly palatable forage species known as "ice cream species." This term has been used for exceptionally palatable plants since at least the 1930s.[337] According to the Arizona Grazing Lands Conservation Association's "Guide to Rangeland Monitoring and Assessment," an "ice cream species" is "an exceptionally palatable species sought and grazed frequently by livestock or game animals. Such species are often overutilized even under proper grazing."[338] Highly palatable and protein rich, cattle selectively browse Fremont cottonwood seedlings and saplings[339, 340, 341] and can wipe out entire seedling reestablishment sites in a single week through hoof action alone.[342]

In measuring utilization, Holecheck (1988) states "one to three plant species are used as key species. These plants should be abundant, productive, and palatable. They should provide the bulk of the forage for the grazing animals within the pasture. The ice-cream plants are not used because of their scarcity and low resistance to grazing."[343] Generally, when the key species and key area are considered properly used, the entire pasture is considered correctly used. [344] However, this conclusion is flawed and breaks down in describing riparian systems, where the highly palatable 'ice cream' species are the next cohorts of riparian trees, the very seedlings that ensure regeneration of the riparian forest itself. According to Holechek et al. (2001), "under the key-species approach, secondary forage species ... will receive light use (10% to 25%), key species ... will receive moderate use (30% to 40%), and the ice-cream plants ... may be used excessively (over 40%)."[345] It appears that no monitoring been done by the Coronado regarding cattle consumption or trampling of cottonwood or willow seedlings, and likewise no monitoring of herbaceous cover pre- and post-monsoon, tree and shrub regeneration and growth, tree cohorts and age classes, and species composition. Our surveys indicate that riparian trees are not allowed germination and critical growth periods to advance in size past the reach of cows.

Furthermore, "even under light grazing intensities, areas around watering points, salt grounds, valley bottoms, and driveways will often be intensely used. These preferred areas are referred to as "sacrifice areas" because setting stocking rates for proper use of these areas will result in underuse of the bulk of the pasture."[346] On multiple allotments in the Notice, livestock waters and mineral licks are currently situated directly in Yellow-billed Cuckoo riparian Critical Habitat and the resulting riparian damage was significant. In many cases, the designated

---

[337] Standing, A.R., 1938. Uses of Key Species, Key Areas and Utilization Standards in Range Management. *Ames Forester*, *26*(1), p.3.

[338] Smith, L., Ruyle, G., Dyess, J., Meyer, W., Barker, S., Lane, C.B., Williams, S.M., Maynard, J.L., Bell, D., Stewart, D. and Coulloudon, A., 2012. Guide to rangeland monitoring and assessment, basic concepts for collecting, interpreting and use of rangeland data for management planning and decisions. Arizona Grazing Lands Conservation Association, Tucson, Arizona, USA.

[339] Glinski, R.L., 1977, July. Regeneration and distribution of sycamore and cottonwood trees along Sonoita Creek, Santa Cruz County, Arizona. In Johnson, RR, and Jones, DA, tech. coords. Importance, preservation and management of riparian habitat: a symposium. Gen. Tech. Rep. RM-43. Fort Collins, CO: US Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station (pp. 116-123).

[340] Martin, S.C., 1979. Evaluating the impacts of cattle grazing on riparian habitats in the National Forests of Arizona and New Mexico. In *Proceedings of the Forum-Grazing and Riparian/Stream Ecosystems. Trout Unlimited Inc., Denver, Colo* (pp. 35-38).

[341] Stromberg, J.C., 1997. Growth and survivorship of Fremont cottonwood, Goodding willow, and salt cedar seedlings after large floods in central Arizona. *The Great Basin Naturalist*, pp.198-208.

[342] Kalischuk, A.R., Rood, S.B. and Mahoney, J.M., 2001. Environmental influences on seedling growth of cottonwood species following a major flood. *Forest Ecology and Management*, *144*(1-3), pp.75-89.

[343] Holechek, J.L., 1988. An approach for setting the stocking rate. Rangelands, 10(1), 10-14.

[344] Id.

[345] Holechek, J.L., R.D. Piper, and C.H. Herbel. 2001. Range Management: Principles and Practices. Prentice Hall, Upper Saddle River, N.J.

[346] Holechek, J.L., 1988. An approach for setting the stocking rate. Rangelands, 10(1), 10-14.

riparian Critical Habitat *is* the watering point or valley bottom where cattle concentrate, and therefore is the "sacrifice area"! There should be no "sacrifice areas" in designated critical habitat. Full cattle exclusion is warranted in these situations.

Public-land range conditions have generally worsened in recent decades,[347] perhaps due to the reduced productivity of these lands caused by past grazing in conjunction with a changing climate.[348] Drought conditions in the western United States continue with over 97% of lands in the western region experiencing some level of drought (D0-D4). Nearly half of these lands are in the extreme (D3) or exceptional (D4) drought category.[349] Current forecasts indicate little change, with drought conditions expected to continue for the foreseeable future.[350] In discussion of the effects of drought on Yellow-billed Cuckoo habitat, USFWS explains:

> "The drought has not only caused the thinning of cottonwood canopy at the Pima County CCNP (Powell 2013b: figure 40; Powell et al. 2014:figure 12) and death of cottonwoods at the Pima County CCNP (Pima Association of Governments 2014), it has caused the decline in the mesquite bosque vegetation community that borders the mesic riparian vegetation along the creek margins (Figure 34 in Powell et al. 2014). Between 2005 and 2011, most of the vegetation away from the active channel at the Pima County CCNP declined."[351]

Livestock affect ecosystem resources in ways that accentuate climate impacts.[352] Despite these dire climate circumstances, status quo livestock grazing continues to occur with no practical revisions, continually harming future vegetation recovery and removing what little cover is available for wildlife, including birds that require vegetative structure for nesting success like Yellow-billed Cuckoo.

We've established with USFWS examples that:

1. "Although effects of the drought are evident throughout Upper Cienega Creek, pockets of hydroriparian habitat can rapidly improve in suitability for both cuckoos and willow flycatchers."[353]

2. "We also anticipate that climate change will degrade habitat to the point of being incapable of supporting the occurrence of yellow-billed cuckoos."[354]

If climate change alone could eliminate Yellow-billed Cuckoo, it cannot be justified to add another known negative stressor such as cattle grazing in Yellow-billed Cuckoo riparian habitat. The vast majority of grazed

---

[347] Donahue, D.L., 2006. Federal rangeland policy: perverting law and jeopardizing ecosystem services. J. Land Use & Envtl. L., 22, p. 299.

[348] Beschta, R.L., Donahue, D.L., DellaSala, D.A., Rhodes, J.J., Karr, J.R., O'Brien, M.H., Fleischner, T.L. and Williams, C.D., 2013. Adapting to climate change on western public lands: addressing the ecological effects of domestic, wild, and feral ungulates. Environmental Management, 51(2), pp.474-491.

[349] https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?West

[350] https://droughtmonitor.unl.edu/ConditionsOutlooks/Outlooks.aspx

[351] April 28, 2016, Amended Final Reinitiated Biological and Conference Opinion for the Rosemont Copper Mine, Pima County, Arizona, p. 245.

[352] Beschta, R.L., Donahue, D.L., DellaSala, D.A., Rhodes, J.J., Karr, J.R., O'Brien, M.H., Fleischner, T.L. and Williams, C.D., 2013. Adapting to climate change on western public lands: addressing the ecological effects of domestic, wild, and feral ungulates. Environmental Management, 51(2), pp.474-491.

[353] April 28, 2016, Amended Final Reinitiated Biological and Conference Opinion for the Rosemont Copper Mine, Pima County, Arizona p. 235.

[354] Ibid., page 242.

western riparian areas are deficient in willow understory and nearly devoid of overstory cottonwood.[355,356] Foraging cattle continue to reduce the density of willow and other shrubs, eliminate cottonwood and willow reproduction by feeding on and trampling seedlings, and modify habitat through soil compaction and other means.[357,358,359,360,361] This unwarranted ecological impact has resulted in doomed stands where old cottonwood trees in the overstory are dying with no new recruitment to replace themselves.[362,363,364,365] An obvious conclusion is that grazing can prevent riparian areas from yielding habitat for Yellow-billed Cuckoo in perpetuity in AZ. This Notice shows riparian ecosystems trampled and impacted by cattle to the extent that their future is uncertain.

With this new information, continued failure by the Forest Service and USFWS to reinitiate consultation on the Greaterville, Bear Valley, Montana, Lake, Box Canyon, and Rosemont allotments on the Coronado National Forest Nogales Ranger District; the Lyle Canyon, Lone Mountain, McBeth, Hayfield, Duquesne, Santa Cruz allotment, Alisos allotment, Lewis allotment, McFarland, Harshaw, Farrel, Proctor, and Agua Caliente allotments on the Coronado National Forest Sierra Vista Ranger District violates the law.[366] Reinitiation of consultation must take place.[367]

As provided in 50 CFR '402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

In addition to the obligation to avoid jeopardizing species or destroying or adversely modifying their critical habitat under Section 7(a)(2) of the ESA, Section 7(a)(1) imposes an obligation on all federal agencies, in consultation with USFWS, to "carry[] out programs for the conservation" of listed species. 16 U.S.C. § 1536(a)(l). This provision imposes an "affirmative duty on each federal agency to conserve each of the species listed." Sierra Club v. Glickman, 156 F.3d 606,616 (5th Cir. 1998); accord Pyramid Lake Paiute Tribe, 898 F.2d at 1416-17 (noting that federal agencies have "affirmative obligations to conserve under [S]ection 7(a)(1)"). "Conserve" is

---

[355] Fleischner, T.L., 1994. Ecological costs of livestock grazing in western North America. *Conservation biology*, *8*(3), pp.629-644.

[356] Stromberg, J.C., 1993. Fremont cottonwood-Goodding willow riparian forests: a review of their ecology, threats, and recovery potential. Journal of the Arizona-Nevada Academy of Science, pp.97-110.

[357] Glinski, R.L., 1977, July. Regeneration and distribution of sycamore and cottonwood trees along Sonoita Creek, Santa Cruz County, Arizona. In Johnson, RR, and Jones, DA, tech. coords. Importance, preservation and management of riparian habitat: a symposium. Gen. Tech. Rep. RM-43. Fort Collins, CO: US Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station (pp. 116-123).

[358] Belsky, A.J., Matzke, A. and Uselman, S., 1999. Survey of livestock influences on stream and riparian ecosystems in the western United States. *Journal of Soil and water Conservation*, *54*(1), pp.419-431.

[359] Reichenbacher, F.W., 1984. Ecology and evolution of southwestern riparian plant communities [The relationship between the distributions of plants in the floodplain and a set of physical site factors, Trout Creek, Mohave County Arizona; USA]. *Desert Plants*.

[360] Fleischner, T.L., 1994. Ecological costs of livestock grazing in western North America. Conservation Biology, *8*(3), pp.629-644.

[361] Taylor, D. M., and C. D. Littlefield. 1986. Willow flycatcher and yellow warbler response to cattle grazing. American Birds 40:1169-1173.

[362] Klebenow, D.A. and Oakleaf, R.J., 1984. Historical avifaunal changes in the riparian zone of the Truckee River.

[363] Reichenbacher, F.W., 1984. Ecology and evolution of southwestern riparian plant communities [The relationship between the distributions of plants in the floodplain and a set of physical site factors, Trout Creek, Mohave County Arizona; USA]. *Desert Plants*.

[364] Stromberg, J.C., 1993. Fremont cottonwood-Goodding willow riparian forests: a review of their ecology, threats, and recovery potential. Journal of the Arizona-Nevada Academy of Science, pp.97-110.

[365] Taylor, D. M., and C. D. Littlefield. 1986. Willow flycatcher and yellow warbler response to cattle grazing. American Birds 40:1169-1173.

[366] 16 U.S.C. § 1536(a)(2) and 50 C.F.R. § 402.14(g).

[367] 16 U.S.C. § 1532, 50 CFR § 17.21, 16 U.S.C. § 1536(b)(4).

defined by the ESA to mean recovery, i.e., the "use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided [in the ESA] are no longer necessary." 16 U.S.C § l 536(a)(1).

The following is just one example from a Coronado National Forest grazing allotment where essential habitat features for breeding Yellow-billed Cuckoo have been removed by authorized cattle grazing:

Grazed Yellow-billed Cuckoo riparian critical habitat in the Box Canyon allotment. 31.79838, -110.777484, April 22, 2021.

Based on these images, it is difficult to ascertain from the grazing damages depicted that these photos were even taken in a riparian area. To reiterate, Yellow-billed Cuckoo reproductive habitat consists of large non-fragmented landscapes of old growth mature cottonwood-willow gallery forest, with dense multistory layers of vegetation in both the subcanopy and ground layers, and the presence of perennial surface water.[368] Range-wide breeding habitat is composed of riparian woodlands within floodplains or in upland areas or terraces often greater than 325 ft (100 m) in width and 200 ac (81 ha) or more in extent ***with an overstory and understory vegetation component in contiguous or nearly contiguous patches*** adjacent to intermittent or perennial watercourses.[369]

According to USFWS in their 2021 final determination of Critical Habitat:

> "As described in the Critical Habitat section, features such as **understory and overstory components with high humidity** are considered important for habitat selection for breeding western yellow-billed cuckoos. This is especially true in ephemeral, tree-lined xeroriparian drainages."[370]

Yellow-billed Cuckoo breeding habitat in the Coronado National Forest is best described as consisting of xeroriparian drainages. Thus, it is especially important in this National Forest that riparian and understory vegetation remain intact by the onset of Yellow-billed Cuckoo arrivals in Arizona for breeding in June. Overall, our habitat surveys found that Yellow-billed Cuckoo critical habitat across the board in the Coronado National Forest lacked the vegetative structure to serve its intended purpose in supporting Yellow-billed Cuckoo recovery.

---

[368] Rosenberg, K.V., R.D. Ohmart, W.C. Hunter, and B.W. Anderson. 1991. Birds of the Lower Colorado River Valley. Univ. Arizona Press, Tucson, AZ. 416pp.; Johnson, M.J., S.L. Durst, C.M. Calvo, L. Stewart, M.K. Sogge, G. Bland, and T. Arundel. 2008. Yellow-billed Cuckoo Distribution, Abundance, and Habitat Use Along the Lower Colorado River and its Tributaries, 2007 Annual Report. USGS, Open File Report 2008-1177. 274pp.

[369] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register Vol. 86, No. 75, Wednesday, April 21, 2021, page 20939.

[370] Ibid., page 20815.

FAILURE TO ADEQUATELY PROTECT SONORA CHUB AND ITS CRITICAL HABITAT

In 1995, Sonora Chub was documented to occupy California Gulch on the Coronado National Forest.[371] However, Critical Habitat has never been upgraded to include California Gulch because USFWS assumed that Endangered Species Act Section 7 consultation on the area's cattle grazing "ensures" protection of the Sonora Chub and its habitat.

Specifically, according to USFWS' August 2013, Sonora Chub 5-Year Review, "the presence of Sonora chub there ensures that consultations for actions within the area are completed…[and] Sonora chub are also now a primary consideration in the development of allotment management plans for grazing allotments in both Sycamore Canyon and California Gulch…"[372]

But USFWS' August 2013, assumption that "consultations for actions within the area"[373] without designation of Critical Habitat, would provide for adequate protection of California Gulch has not proven to be correct. The Coronado National Forest has failed to adequately "maintain two exclosures, and promote and enhance existing Sonora chub habitat in lower California Gulch" as assumed.

The 2021 Biological Opinion also makes the following statements,

> "The [Recovery] Plan's recovery outline contains tasks that, when completed, would achieve the stated ends. The tasks are as follows:
>
> I. Protect Remaining Populations of Sonora chub
>
> > A. Recognize Critical Habitat. Critical habitat has been recognized, and designated along Sycamore Creek in Santa Cruz County, Arizona. Critical habitat is not designated along California Gulch in Santa Cruz County, Arizona. Critical habitat was designated in 1986 and includes portions of Sycamore Canyon and its tributaries, which is occupied by the main population of Sonora chub in the U.S. At that time, Sonora chub were not known to occur in California Gulch, and critical habitat was not designated in that stream. Since that time, we determined that California Gulch is occupied by Sonora chub. While it is not included in the original critical habitat designation, the presence of Sonora chub there ensures that consultations for actions within the area are completed. As of this time, designation of critical habitat is not needed, but should it become necessary, the Service may modify the existing critical habitat to include California Gulch."[374];
>
> "Sonora chub are also now a primary consideration in the development of allotment management plans for grazing allotments in both Sycamore Canyon and California Gulch, south of Ruby Road."[375]; and,

---

[371] Report on "Sonora chub collection in California Gulch," Arizona Game and Fish Department, 1995, as cited in Correspondence to: U.S. Department of Homeland Security Customs and Border Protection SBI*net* Program Management Office Acting SBI*net* Program Manager John Santo, from: USFWS Arizona Field Supervisor Steven L. Spangle, RE: Biological Opinion #ASO/SE 22410-2008-F-0373 on impacts that may result from the propose SBI*net* Tucson West Tower Project, September 4, 2008, page 131.; Correspondence to: U.S. Customs and Border Protection Border patrol Facilities and Tactical Infrastructure Director Christopher J. Colacicco, from: USFWS Arizona Field Supervisor Steven L. Spangle, RE: Biological Opinion #ASO/SE 02EAAZOO-2012-F-0170 on the proposed Tactical Infrastructure Maintenance and Repair Program along the U.S./Mexico international border in Arizona, November 6, 2012, p. 164.

[372] Sonora chub/Charalito Sonorense (*Gila ditaenia*) 5-Year Review: Summary and Evaluation, U.S. Fish and Wildlife Service Arizona Ecological Services Office, Phoenix, Arizona, August 2013, page 26.

[373] Ibid.

[374] 2021 Biological Opinion, page 66.

[375] Id, page 72.

"The Forest's Conservation Measure 20 ["Maintain the existing California Gulch and Sycamore Canyon Exclosures"[376]] ensures that any direct or indirect effects from grazing to Sonora chub within occupied exclosures are minimized. The Forest will maintain the existing California Gulch and Sycamore Canyon exclosures while permitted livestock are grazing bordering pastures by ensuring exclosure fences are functional upon livestock entry to these pastures and working with permit holders to check and repair these exclosure fences such that no fence is non-functional for more than two weeks."[377]

Grazing is a known threat to Sonora Chub and its habitat. For example, according to USFWS' August 2013, Sonora Chub 5-Year Review,

> "Some adverse impacts continue associated with cattle grazing, which have the potential of setting back recovery. The degradation, siltation, and water pollution caused primarily by livestock grazing within the riparian corridors remain threats in areas where grazing is not properly managed (USFWS 2012a). The Sonora chub prefers pools of clear water created by cliffs, boulders, and other cover in intermittent streams. It is difficult for cattle to reach areas like these, but upstream grazing can affect downstream habitat conditions. Grazing activities associated with the CNF's Rangeland Management Program may result in adverse effects to the Sonora chub's critical habitat. Livestock grazing activities can contribute to changes in surface runoff quantity and intensity, sediment transport, and water holding capabilities of the watershed (USFWS 2002, USFWS 2012a). This occurs especially where cattle tend to congregate, often near water sources (USFWS 2012a)."[378]

Adverse impacts to Sonora Chub from grazing are supposed to be avoided by the presence of functional cattle exclosures. Thus, the Coronado National Forest must report yearly to USFWS concerning Sonora Chub and its habitat. Pertinent excerpts from 2014-2019 reports include:

> "Nogales Ranger District…Resource Area: Range…Species: Sonora Chub…Task(s):
>
> 1a. All reasonable efforts shall be made to remove any livestock from the existing exclosures as soon as discovery of fence damage and livestock intrusion occurs. The Service shall be notified within 24-48 hours upon observation of livestock intrusion. …Accomplishments: 1a. Exclosure is monitored and livestock has been removed and fence repairs have been made throughout this time period as necessary[379] …
>
> Task(s): 4a. Records will be maintained of downed or damaged exclosure fencing and incidents of livestock intrusion within the proposed riparian pasture in California Gulch. Reports to the Service should include dates of observations, sightings of any livestock use, number of livestock, area of use, and any other pertinent information. Copies of these reports will be sent annually to the Service. … Accomplishments: 4a. Exclosure is monitored and fence repairs have been made throughout this time period as necessary.
>
> -June 2016 – Break in fence repaired, no water present.
>
> -August 2016 – Trespass cattle from Mexico removed from exclosure due to failure of water gap at international boundary. Water gap repaired, little water present, no fish observed. -September 2017 - Trespass cattle from Mexico removed from exclosure due to

[376] Id., page 15.

[377] Id, page 74.

[378] 2013 Sonora chub 5-year review pg. 16.

[379] Draft Coronado National Forest Service Annual Monitoring Report 2014-2019, July 2020, Contact: Angela Dahlby 520-388-8374; Coronado National Forest Service, Tucson, AZ 85701; "Nogales Ranger District: Project: CLG [Continuation of Long-term Grazing] on Montana Allotment (AESO/SE 2-21-00-F-344 [Amend], dated 06/12/2001), page 7.

failure of water gap at international boundary. Water gap repaired, water flowing, no fish observed.

-September 2018. Water gap at international boundary replaced, no fish observed[380]…

Forest-Wide…Nogales Ranger District: Species…Sonora Chub: Task(s): Manage riparian areas adjacent to and upstream of Sonora Chub populations for conditions to eliminate direct effects and minimize indirect effects to Sonora Chub and its habitat. … Accomplishments: Sycamore Canyon is fenced to exclude livestock. California Gulch is managed to emphasize short term dormant season grazing."[381]

The Annual Monitoring Report for 2020 says:

"Nogales Ranger District: Project: CLG [Continuation of Long-term Grazing] on Montana Allotment (AESO/SE 2-21-00-F-344 [Amend], dated 06/12/2001)…Resource Area: Range…Species: Sonora Chub…Task(s):

1a. All reasonable efforts shall be made to remove any livestock from the existing exclosures as soon as discovery of fence damage and livestock intrusion occurs. The Service shall be notified within 24-48 hours upon observation of livestock intrusion. …Accomplishments: 1a. Exclosure is monitored and livestock has been removed and fence repairs have been made throughout this time period as necessary.[382]

Task(s): 4a. Records will be maintained of downed or damaged exclosure fencing and incidents of livestock intrusion within the proposed riparian pasture in California Gulch. Reports to the Service should include dates of observations, sightings of any livestock use, number of livestock, area of use, and any other pertinent information. Copies of these reports will be sent annually to the Service…. Accomplishments: 4a. Exclosure is monitored and fence repairs were made in March along the international boundary with Mexico."[383]

The protections mentioned in the 2021 Biological Opinion, Biological Opinion and in the annual reports 2014-2019 and 2020 do not reflect the reality on the ground. We have documented significant grazing impacts in California Gulch from Spring 2021 to November 2021. The upper California Gulch Sonora Chub exclosure fencing was dysfunctional and in gross disrepair. The area inside of the upper exclosure has been significantly damaged by cattle. The lower exclosure has been similarly significantly damaged by cattle grazing. Site conditions, including within and immediately upstream of Sonora chub exclosures, appeared significant.

[380] Id., page 9.

[381] Id., page 35.

[382] Coronado National Forest Annual Monitoring Report 2020, Contact: Angela Dahlby, Forest Biologist, Coronado National Forest Service, Tucson, AZ 85701, angela.dahlby@usda.gov, 520-388-8374, undated; page 3.

[383] Id., page 4.

Grazed upper (1) and lower (2) Sonora Chub cattle exclosures, California Gulch, 31,24.3857N, 111,14.3853W (1), 31,23.526N, 111,14.876W (2), June 1, 2021, © Robin Silver.

Grazed Yellow-billed Cuckoo riparian Critical Habitat, immediately upstream of the upper Sonora Chub exclosure in California Gulch, Montana Allotment, Coronado National Forest. 31.406631, -111.238679, May 5, 2021.

FAILURE TO ADEQUATELY PROTECT NORTHERN MEXICAN GARTERSNAKE AND ITS CRITICAL HABITAT

Authorized and unauthorized cattle grazing is resulting in negative impacts to riparian ecosystems, cienegas and other wetlands designated as critical to recovery for two threatened Arizona snakes. Stream channels and shorelines are chiseled and trampled. Riparian vegetation has been grazed resulting in decreased shelter, cover, foraging opportunities and protection from predators. Upland critical habitat has been significantly impacted by grazing and water quality fouled by cattle feces.

According to the 2021, Biological Opinion, the ITS for NMGS is based on "measurable effects to its prey base, discussed in the above "Effects" section, as a surrogate for evaluating take of this species. This is an appropriate surrogate for the amount and effect of take of the northern Mexican gartersnake because not only are these effects measurable in terms of their effect to primary prey species of the gartersnake, but also because of the tight correlation between occupancy of northern Mexican gartersnakes and an available, functioning, and reliable prey base. Therefore, take of northern Mexican gartersnakes will be considered exceeded if take is exceeded for the Gila topminnow, Chiricahua leopard frog, or Sonoran tiger salamander within the Huachuca EMA."[384]

This ITS is arbitrary and capricious. First, NMGS consume a variety of prey, not just the three listed species used as surrogates. For example:

[384] Biological Opinion on Ongoing Grazing on the Coronado National Forest, Graham, Cochise, Pima, Pinal, and Santa Cruz Counties, Arizona and Hidalgo County, New Mexico. AESO/SE, 2-21-98-F-399, 2-21-98-F-399R1, 02EAAZ00-2019-F-0867, September 30, 2021, p. 142.

> "The species is thought to rely primarily on native, small-bodied prey including annelids, leopard frog (*Lithobates* sp.) adults and tadpoles, Mexican Spadefoot (*Spea multiplicata*) adults, Woodhouse's Toad (*Anaxyrus woodhousii*) juveniles and tadpoles, and Western Tiger Salamander (*Ambystoma mavortium*) larvae (USFWS 2014). However, nonnative aquatic vertebrates have also been identified as potential food sources, including *L. catesbeianus* juveniles and tadpoles, soft-rayed fish including the Western Mosquitofish (*Gambusia affinis*) and the Red Shiner (*Cyprinella lutrensis*) (S. Lashway, T. Sprague, pers. comm.), and Goldfish (Carassius auratus), a nonnative spiny-rayed cyprinid fish (García and Drummond 1988)."[385]

As stated above, for Northern Mexican Gartersnake, the 2021 Biological Opinion states, "we use measurable effects to its prey base…as a surrogate for the amount and effect of take of the northern Mexican gartersnake…Therefore, take of northern Mexican gartersnakes will be considered exceeded for the Gila Topminnow, Chiricahua leopard frog, or Sonoran tiger salamander…"[386]

This scheme is effectively a shell game with no protection for designated riparian Critical Habitat essential for Recovery in spite of the fact that USFWS states in the April 28, 2021, Critical Habitat rule:

> "In the revised proposed critical habitat rule (85 FR 23608; April 28, 2020), we explained that although northern Mexican gartersnakes have been found in a variety of vegetation types within the riparian zone (*i.e.*, grasses, shrubs, and wetland plants), the underlying characteristic of this habitat needed by the gartersnake appears to be dense vegetation or other natural structural components that provide cover for the species."[387]
>
> "As explained in the revised proposed critical habitat rule (85 FR 23608; April 28, 2020), terrestrial habitat adjacent to the stream channel that includes riparian vegetation, small mammal burrows, boulder fields, rock crevices, and downed woody debris provides areas for thermoregulation, shelter, foraging opportunities, brumation, and protection from predators."[388]
>
> "In the revised proposed critical habitat rule (85 FR 23608; April 28, 2020) and this final rule, critical habitat includes occupied streams or stream reaches within the historical range with survey records of the northern Mexican gartersnake dated from 1998 to 2019 that have retained the necessary PBFs [physical or biological features] that will allow for the maintenance and expansion of existing populations. We placed outer boundaries on the portion of a stream that is considered occupied. We identified the most upstream and downstream records of the northern Mexican gartersnake along each continuous stream reach determined by presence of PBFs, and we extended the stream reach to include a dispersal distance of 2.2 mi (3.6 km). After identifying the stream reaches that meet the above parameters, we then connected those reaches with areas between that have the PBFs. We consider these areas between survey records occupied because the species occurs upstream and downstream and multiple PBFs are present that allow the species to move through these stream reaches.[389]
>
> "*Summary of Essential Physical or Biological Features* … We have determined that the following physical or biological features are essential to the conservation of the northern Mexican gartersnake:

---

[385] Emmons, I.D., Nowak, E.M. and Lauger, K.K., 2016. Prey availability and foraging events of the northern Mexican gartersnake (*Thamnophis eques megalops*) in north-central Arizona. Herpetological Review, 47(4), pp.555-561.

[386] 2021 Biological Opinion, page 142.

[387] Designation of Critical Habitat for the Northern Mexican Gartersnake, Final Rule, 86 FR 22518, USFWS, April 28, 2021, page 22528.

[388] Id., page 22529.

[389] Ibid.

> 1. Perennial or spatially intermittent streams that provide both aquatic and terrestrial habitat that allows for immigration, emigration, and maintenance of population connectivity of northern Mexican gartersnakes and contain:
>
> (A) Slow-moving water (walking speed) with in-stream pools, off-channel pools, and backwater habitat;
>
> (B) Organic and natural inorganic structural features (*e.g.*, boulders, dense aquatic and wetland vegetation, leaf litter, logs, and debris jams) within the stream channel for thermoregulation, shelter, foraging opportunities, and protection from predators;
>
> (C) Terrestrial habitat adjacent to the stream channel that includes riparian vegetation, small mammal burrows, boulder fields, rock crevices, and downed woody debris for thermoregulation, shelter, foraging opportunities, brumation, and protection from predators"[390] …
>
> In summary, for areas within the geographic area occupied by the species at the time of listing, we delineated critical habitat unit boundaries using the following criteria: PAGE 22538 … We identified and included the wetland and riparian area adjacent to streams, springs, cienegas, and ponds to capture the wetland and riparian habitat needed by the species for thermoregulation, foraging, and protection from predators."[391]

The 2021 Biological Opinion's Incidental Take Statement for Chiricahua Leopard Frog does not protect Northern Mexican Gartersnake because its "protection" is reliant purely on the "stockpond management plan"[392] leaving designated riparian Critical Habitat inadequately protected with non-applicable cow utilization metrics instead of exclosures.

Gila Topminnow does not have designated Critical Habitat.[393] The 2021 Biological Opinion states that, "[t]ake will be considered to have been exceeded if the following conditions occur: a. Livestock grazing occurs within a pasture containing occupied habitat resulting in use measured at a level higher than authorized for that specific pasture in any two of three subsequent monitoring events. Forage utilization will be measured and analyzed in accordance with Forest Service policy as described in the proposed action."[394]

In other words, just like with Yellow-billed Cuckoo designated Critical Habitat, pastures containing occupied Gila Topminnow streams are inadequately protected by the same scheme of non-applicable cow utilization metrics instead of exclosures. Hence the shell game where Northern Mexican Gartersnake designated Critical Habitat is left inadequately protected by Gila Topminnow pastures which are in turn inadequately protected by non-applicable cow utilization metrics instead of exclosures.

Sonora Tiger Salamander does not have designated Critical Habitat.[395]

The 2021 Biological Opinion concludes that the "likelihood of aquatic populations being eliminated or individual salamanders being taken is reduced by the Stockpond Management Plan…"[396] This conclusion fails to

---

[390] Id., page 22536.

[391] Id., page 22539.

[392] 2021 Biological Opinion, pages 98 and 99.

[393] General Species Information for Gila Topminnow (*Poeciliopsis occidentalis occidentalis*), USFWS, May 2008.

[394] 2021 Biological Opinion, page 62.

[395] General Species Information for Sonora Tiger Salamander (*Ambystoma tigrinum stebbinsi*), USFWS, January 6, 1997.

[396] 2021 Biological Opinion, page 115.

recognize "[n]ew information on the species' biology and life history…relevant to Sonora tiger salamander biology" from USFWS own Sonora Tiger Salamander 5-Year Review[397] where:

> "Pitman (2005) excavated burrows and found tiger salamanders at a mean distance of 356 m, but as far away as 510 m, from the nearest breeding pond in gopher burrows, riprap, and in rocks associated with gopher burrows. He suggests upland habitats should be protected and managed for healthy small mammal populations within 500 m of breeding sites."[398]

Consequently, protection of Sonora Tiger Salamander based purely on a stockpond management plan which not only affords the salamander itself inadequate protection but again, as part of the 2021 Biological Opinion's shell game, affords no protection for designated riparian Northern Mexican Gartersnake Critical Habitat.

Secondly, NMGS are not imperiled due to a lack of food, but more importantly to structural habitat loss and invasive species. According to USFWS in the April 28, 2020, proposed rule for Northern Mexican gartersnake critical habitat designation, NMGS require dense aquatic vegetation and minimally polluted water. [399] Outside of the aquatic environment, NMGS requires dense vegetation or other natural structural components that provide cover.[400] Of vital importance, NMGS also require both aquatic and terrestrial habitat that allows for immigration, emigration, and maintenance of population connectivity. [401] Dense vegetation also likely plays a key role in protecting northern Mexican gartersnakes in locations with predatory nonnative species.[402]

Therefore, a habitat surrogate based on the unique life history requirements of NMGS should logically be the basis of the NMGS ITS, instead of relying on the life history requirements of selected and imperiled NMGS prey species. Though there is some overlap, NMGS have different life history requirements than do CLF and Sonora tiger salamanders. For example, NMGS generally require dense aquatic vegetation and dense shoreline vegetation[403]- these habitat components are not included as CLF PCE's. Self-sustaining populations cannot exist in small, isolated grazing exclosures. Therefore, the physical and biological features that these gartersnakes depend on are not currently protected by the ITS in the September 30, 2021, Biological Opinion for ongoing grazing on the Coronado National Forest. [404] A revised ITS statement for NMGS is prudent since the current ITS does not protect NMGS or its habitat.

This NOI presents new information that cow grazing on the Coronado National Forest, both authorized and unauthorized, has significantly impacted gartersnake critical habitat. Poorly managed livestock grazing, a known threat to NMGS and NHGS according to USFWS,[405] is currently resulting in removal, diminishment, and/or significantly alteration of natural habitat features and vegetation structure in and adjacent to critical aquatic habitat. We have also documented in this NOI critical habitat waters that have been polluted by cattle feces.

---

[397] Sonora Tiger Salamander (*Ambystoma tigrinum stebbinsi*) 5-Year Review: Summary and Evaluation, USFWS Arizona Ecological Services Field Office, October 4, 2007.

[398] Id., page 7, citing Pitman, B.T. 2005. Observations of upland habitat use by California tiger salamanders based on burrow excavations. Transactions of the Western Section of the Wildlife Society 41:26-30, page 7.

[399] Federal Register /Vol. 85, No. 82 /Tuesday, April 28, 2020 / Proposed Rules 23615

[400] 85 Fed. Reg. 23617.

[401] Federal Register /Vol. 85, No. 82 /Tuesday, April 28, 2020 / Proposed Rules 23633.

[402] Biological Opinion on Ongoing Grazing on the Coronado National Forest, Graham, Cochise, Pima, Pinal, and Santa Cruz Counties, Arizona and Hidalgo County, New Mexico. AESO/SE, 2-21-98-F-399, 2-21-98-F-399R1, 02EAAZ00-2019-F-0867, September 30, 2021, p. 118.

[403] Federal Register /Vol. 85, No. 82 /Tuesday, April 28, 2020 / Proposed Rules 23615-17.

[404] Biological Opinion on Ongoing Grazing on the Coronado National Forest, Graham, Cochise, Pima, Pinal, and Santa Cruz Counties, Arizona and Hidalgo County, New Mexico. AESO/SE, 2-21-98-F-399, 2-21-98-F-399R1, 02EAAZ00-2019-F-0867, September 30, 2021, p. 142.

[405] Federal Register /Vol. 85, No. 82 /Tuesday, April 28, 2020 / Proposed Rules 23633.

USFWS has defined "'poor' livestock management'" as:

> "We consider poor livestock management to mean grazing conducted in a manner not in accordance with approved allotment management plans **or otherwise considered adverse to maintaining natural habitat characteristics**."[406]

This NOI illustrates that grazing is averse to maintaining natural habitat requirements, especially during drought. Grazing activities result in a reduction of the quality, amount and distribution of key habitat features vital for gartersnake life history requirements and must be immediately discontinued in critical habitat designations to remain in legal compliance.

As provided in 50 CFR '402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

In addition to the obligation to avoid jeopardizing species or destroying or adversely modifying their critical habitat under Section 7(a)(2) of the ESA, Section 7(a)(1) imposes an obligation on all federal agencies, in consultation with the USFWS, to "carry[] out programs for the conservation" of listed species. 16 U.S.C. § 1536(a)(l). This provision imposes an "affirmative duty on each federal agency to conserve each of the species listed." Sierra Club v. Glickman, 156 F.3d 606,616 (5th Cir. 1998); accord Pyramid Lake Paiute Tribe, 898 F.2d at 1416-17 (noting that federal agencies have "affirmative obligations to conserve under [S]ection 7(a)(1)"). "Conserve" is defined by the ESA to mean recovery, i.e., the "use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided [in the ESA] are no longer necessary." 16 U.S.C § l 536(a)(1).

Grazed Northern Mexican gartersnake critical habitat at Little Outfit Tank, San Rafael allotment. 31.479971, -110.569226, June 2, 2021.

[406] Listing and Designation of Critical Habitat for the Chiricahua Leopard Frog, Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register, Vol. 77, No. 54, March 20, 2012, page 16328.

SPECIFIC ESA VIOLATIONS OF THE 2021 BIOLOGICAL OPINION

Critical habitat for Yellow-billed Cuckoo, CLF, NMGS, Sonora Chub and Huachuca Water Umbel ("HWU") was surveyed for cattle impacts throughout the effected grazing allotments on the Coronado National Forest. Surveys completed in summer-fall 2020 focused on CLF critical habitat, and surveys completed in 2021 focused on Yellow-billed cuckoo, northern Mexican garter snake, Sonora chub and Huachuca water umbel designated Critical Habitat.

The Coronado National Forest has repeatedly stated that overgrazing is not a problem and has even requested on the record that overgrazing not be discussed in the context of Yellow-billed cuckoo Critical Habitat.[407] The following descriptions and photos, from cattle impact surveys completed throughout the Coronado National Forest represent new information that indicate to the contrary that cow grazing is diminishing designated riparian Yellow-billed Cuckoo Critical Habitat. Reinitiation of consultation must take place based on new information presented in this Notice.[408]

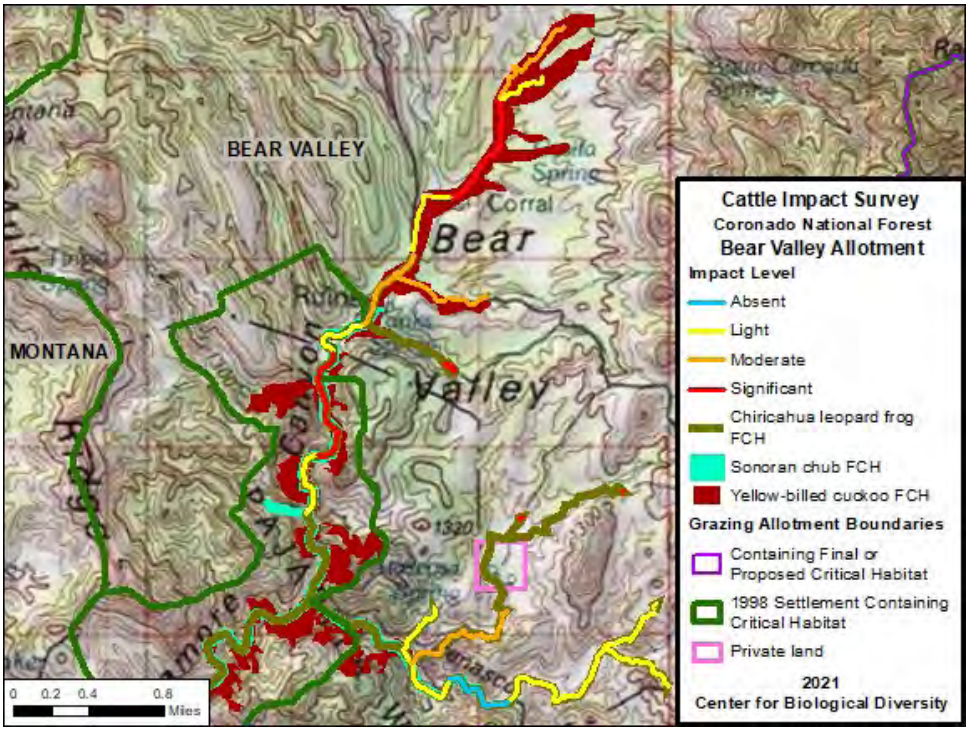
Also added to the descriptions and photo for each allotment are cattle impact survey maps. The purpose of our surveys was to determine and quantify cattle impacts in designated critical habitat throughout the Coronado National Forest. Trained surveyors carefully investigated critical habitat areas for evidence of livestock presence including feces, trails, wallows, as well as extent and severity of grazing pressure on vegetation. Data were recorded and multiple georeferenced photo points were taken along each survey segment to document evidence of livestock impacts. These data represent comprehensive and quantifiable inspections of riparian and xeroriparian conditions on Coronado National Forest allotments.

Following field surveys, each segment's "overall impact level" (defined as absent, light, moderate or significant) was calculated. To determine overall impact level, condition severity scores for each segment endpoint were collated and weighted. Generally, if specific category impacts were light or limited in four categories, the overall impact was considered light. If impact severity in five or more categories were light, then the overall impact was evaluated as moderate. Overall impact scores of moderate also included combinations of limited, light and moderate scores in all six categories. If three or more category conditions were moderate, then the overall impact level rose to significant. If at least one impact category was severe or pervasive, then the overall impact level was evaluated as significant. Color-coded survey segments follow river centerline on all maps. Colors correspond to grazing impact level.

[407] Designation of Critical Habitat for the Western Distinct Population Segment of the Yellow-Billed Cuckoo Final Rule, DEPARTMENT OF THE INTERIOR Fish and Wildlife Service, Federal Register Vol. 86, No. 75, Wednesday, April 21, 2021, page 20801.

[408] 16 U.S.C. § 1532, 50 CFR § 17.21, 16 U.S.C. § 1536(b)(4).

Bear Valley Allotment



Six Chiricahua leopard frog critical habitat breeding ponds within the Bear Valley allotment were surveyed and they varied in cattle impact severity. Cattle impacts were significant at Yank Tank and at Summit Reservoir. There are two ponds named “Mesa Tank.” The Mesa Tank nearest Rattlesnake Tank (upper Penasco Canyon) was completely dry; its impoundment appears to have blown out in a flood and it was overgrown with mesquite trees. Older cattle impacts can be found throughout the area. To the north, the other Mesa Tank was also completely dry. Cattle appeared to have been congregated here during wetter times; however, no recent impacts were observed. Horse Pasture Spring, and the waterway leading to it from Penasco Canyon, showed evidence of moderate cattle impacts, but these impacts were not recent. Little water was present at the spring.

Grazed and eutrophic Chiricahua Leopard Frog Critical Habitat breeding pond at Summit Reservoir in the Bear Valley allotment, Coronado National Forest Nogales Ranger District. 31.39652, -111.14113, September 27, 2020.




Grazed Chiricahua Leopard Frog Critical Habitat breeding pond at Summit Reservoir in the Bear Valley allotment, Coronado National Forest Nogales Ranger District. 31.39652, -111.14113, September 27, 2020.




Grazed Chiricahua Leopard Frog Critical Habitat breeding pond in the Bear Valley allotment, Coronado National Forest Nogales Ranger District. 31.41349, -111.17686, September 27, 2020.

Chiricahua Leopard frog Critical Habitat breeding pond with no recent cattle impacts (note shoreline vegetation) at Rattlesnake Tank in the Bear Valley allotment, Coronado National Forest Nogales Ranger District. 31.40075, -111.16349, September 27, 2020.

Previously grazed but dry Chiricahua Leopard Frog Critical Habitat breeding pond, Mesa Tank (#1), in the Bear Valley allotment, Coronado National Forest Nogales Ranger District. 31.41566, -111.16748, September 27, 2020.

Previously grazed Chiricahua Leopard Frog Critical Habitat breeding pond Mesa Tank (#2) in the Bear Valley allotment, Coronado National Forest Nogales Ranger District. The pond can no longer hold water. 31.40692, - 111.16460, September 27, 2020.

Grazed Chiricahua Leopard Frog Critical Habitat breeding pond at Yank Tank in the Bear Valley allotment, Coronado National Forest Nogales Ranger District. 31.42525, -111.18317, September 27, 2020.

The Bear Valley allotment also contains critical habitat for Yellow-billed Cuckoo. On 4 May 2021, approximately 2.25 miles of Yellow-billed Cuckoo Critical Habitat were surveyed along Sycamore Canyon for cattle impacts in the Bear Valley allotment. This critical habitat is upstream from surveys completed in September 2020 within CLF critical habitat and in the Pajarito Wilderness Area.

This section of Yellow-billed Cuckoo critical habitat stream is ephemeral, and upland flora is characterized by Madrean oak woodlands and emory oak dominated grasslands. Seep willow and *Fraxinus sp.* characterize the riparian vegetation. The streambed is predominately comprised of gravel and cobbles. Between the Ruby Road/Sycamore Canyon bridge is a functional corral and fenceline at 31.438229, -111.183197; here impacts were light and transient. Trails meandered through most of this segment, however grazing evidence was scarce, and cowpies and tracks were months old.

Upon crossing the cattle guard on the fenceline at 31.438229, -111.183197, the character of impacts dramatically changed. Live cows were observed here. A functional water trough exists at this corral, which concentrates cattle in the proximity. Grazing impacts in Yellow-billed Cuckoo Critical Habitat were significant in this area. Critical Habitat features important for breeding and foraging Yellow-billed Cuckoo were diminished.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Bear Valley allotment, Coronado National Forest. 31.440025, -111.180796, May, 4 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Bear Valley allotment, Coronado National Forest. 31.445114, -111.178908, May 4, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Bear Valley allotment, Coronado National Forest. 31.439182, -111.181912, May 4, 2021.

The Bear Valley allotment also contains critical habitat for Sonora Chub. On more than one occasion, CBD surveys have documented unauthorized cattle in Sycamore Canyon in the Pajarito Wilderness adjacent to the Bear Valley allotment. We first brought up this issue in 2020 following our CLF critical habitat surveys. Cattle were still there during Yellow-billed Cuckoo habitat surveys. This has been a recurring issue spanning decades and is currently ongoing, despite a supposed reprieve around the turn of the century.

> "According to the 1999 USFWS Biological Opinion, cattle had regularly gained access to Sycamore Canyon through an un-maintained section of fence along the international border (USFWS 2012a) and degraded the riparian vegetation in the lower 4.0 kilometers (2.5 miles) of the stream (Carpenter 1992). This fence was repaired with the permittee responding to trespass cattle in a timely manner; monitoring data from the CNF have not seen evidence of cattle within the past five years in this area (USFWS 2002, USFWS 2005).[409]

[409] 2013 Sonora Chub 5-year review pg. 16.

Cross S Allotment

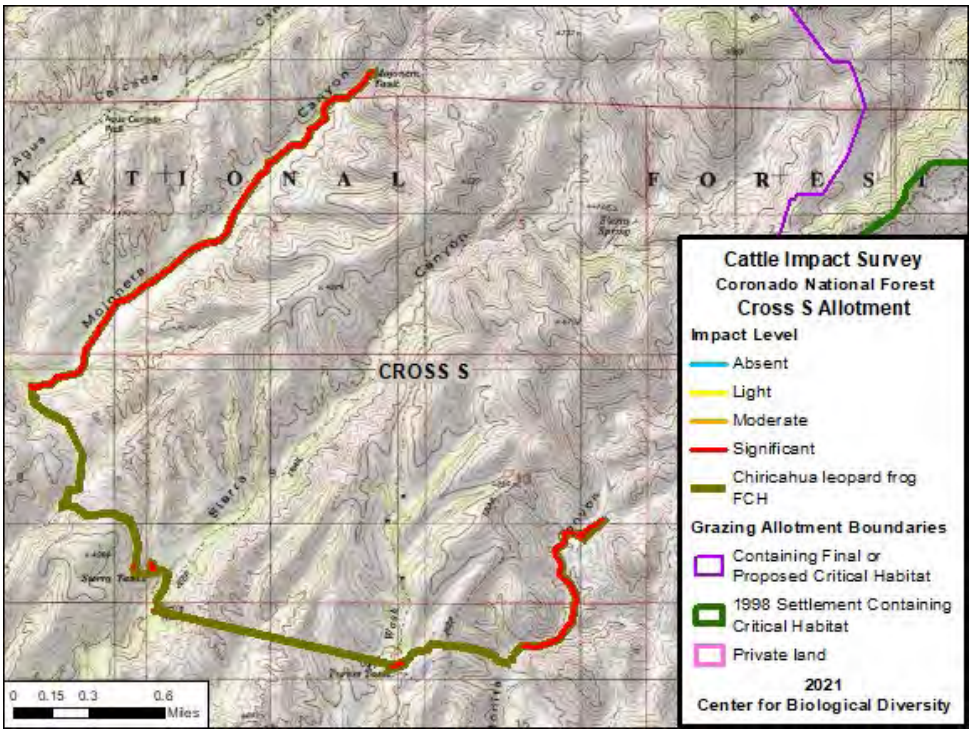


Figure A-2. Grazing impact levels in designated Chiricahua leopard frog critical habitat on the Cross S allotment, Nogales Ranger District, Coronado National Forest.

Chiricahua Leopard Frog Critical Habitat on the Cross S allotment is characterized by mostly ephemeral Mojonera Canyon, a small section of Sierra Canyon and Alamo Wash, and Bonita Canyon. A total of six critical habitat ponds are on this allotment: Mojonera Tank, two ponds labelled as Sierra Tanks, a third called Sierra Well, Upper Turner Tank and Bonita Tank at the terminus of the Critical Habitat stream in Bonita Canyon.

Mojonera Canyon was impacted by cattle with signs of long-term use. The surveyed stream course was significantly grazed, browsed, littered with cattle feces and exhibited numerous trails, wallows and ground disturbances. Large concentrations of cattle feces were left on significantly impacted riparian benches. Cattle sign was old and recent, indicating a sustained presence in the area. Cattle were also observed during survey. Critical habitat in Bonita Canyon showed similar impacts to Mojonera Canyon and was significantly impacted by cattle.

The six ponds within the Cross S allotment all showed significant impacts from cattle use. No exclosure fences were observed at any pond in this allotment. Abundant cattle feces surrounded the shoreline of all six ponds. Vegetation in surrounding areas was diminished through grazing/browsing in the pond vicinity. A strong stench of feces permeated the air at all locations. The two ponds known as the Sierra Tanks were completely dry and cow sign appeared consistent and extensive. Waterways leading to ponds were significantly impacted by cattle. Upper Turner Tank in Alamo wash contained feces. No understory vegetation remained in the surrounding area with multiple cattle trails leading to stock pond.

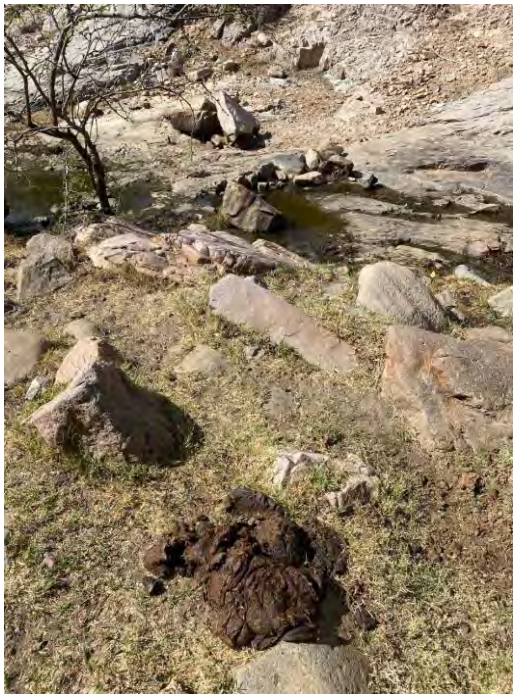
Hundreds of Chiricahua Leopard Frogs were observed in Mojonera Tank with some in the immediate stream vicinity. This occupied pond was contaminated with cattle feces, showed significant grazing/browsing pressure along the shoreline, and a strong stench of cattle feces permeated the air. This pond may have been augmented with captive-bred Chiricahua Leopard Frogs. No frogs were observed elsewhere on the allotment and they had no uncontaminated habitat option. These conditions do not support recovery.

Grazed Chiricahua Leopard Frog Critical Habitat riparian stream in Mojonera Canyon in the Cross S allotment, Coronado National Forest Nogales Ranger District. 31.44629, -111.34132 (1); 31.44629, -111.34132 (2); 31.44630, -111.34134 (3); 31.46219, -111.32333 (4). November 5, 2020.

Grazed Chiricahua Leopard Frog Critical Habitat riparian stream in Mojonera Canyon in the Cross S allotment, Coronado National Forest, Nogales Ranger District. 31.44630, -111.34132. November 5, 2020.


Grazed Chiricahua Leopard Frog Critical Habitat riparian stream in Mojonera Canyon in the Cross S allotment, Coronado National Forest, Nogales Ranger District. 31.45051, -111.33722. November 5, 2020.






Grazed Chiricahua Leopard Frog Critical Habitat riparian stream in Mojonera Canyon in the Cross S allotment, Coronado National Forest, Nogales Ranger District. 31.46365, -111.32071. November 5, 2020.

Grazed Chiricahua Leopard Frog Critical Habitat breeding pond in Mojonera Canyon in the Cross S allotment, Coronado National Forest Nogales Ranger District. 31.464116, -111.320286, November 5, 2020.


Cattle feces in and around a Chiricahua Leopard Frog Critical Habitat breeding pond in Mojonera Canyon in the Cross S allotment, Coronado National Forest, Nogales Ranger District. 31.464116, -111.320286. November 5, 2020.


Grazed Chiricahua Leopard Frog Critical Habitat breeding pond (Sierra Tanks) in the Cross S allotment, Coronado National Forest Nogales Ranger District. 31.435413, - 111.335022. November 5, 2020.




Grazed Chiricahua Leopard Frog Critical Habitat pond (Sierra Tanks) in the Cross S allotment, Coronado National Forest Nogales Ranger District. 31.435413, -111.335022, November 5, 2020.

Grazed Chiricahua Leopard Frog Critical Habitat breeding pond (Sierra Well) in the Cross S allotment, Coronado National Forest, Nogales Ranger District. A dead coyote was also observed at this pond, likely poisoned and possibly further contaminating the water. 31.433030, -111.334621, November 5, 2020.


Grazed Chiricahua Leopard Frog Critical Habitat breeding pond (Upper Turner Tank) in the Cross S allotment, Coronado National Forest, Nogales Ranger District. 31.429792, -111.317956. November 5, 2020.


Bonita Tank, a grazed Chiricahua Leopard Frog Critical Habitat breeding pond in Bonita Canyon in the Cross S allotment, Coronado National Forest Nogales Ranger District. 31.437385, -111.305976, November 5, 2020.

Lake Allotment

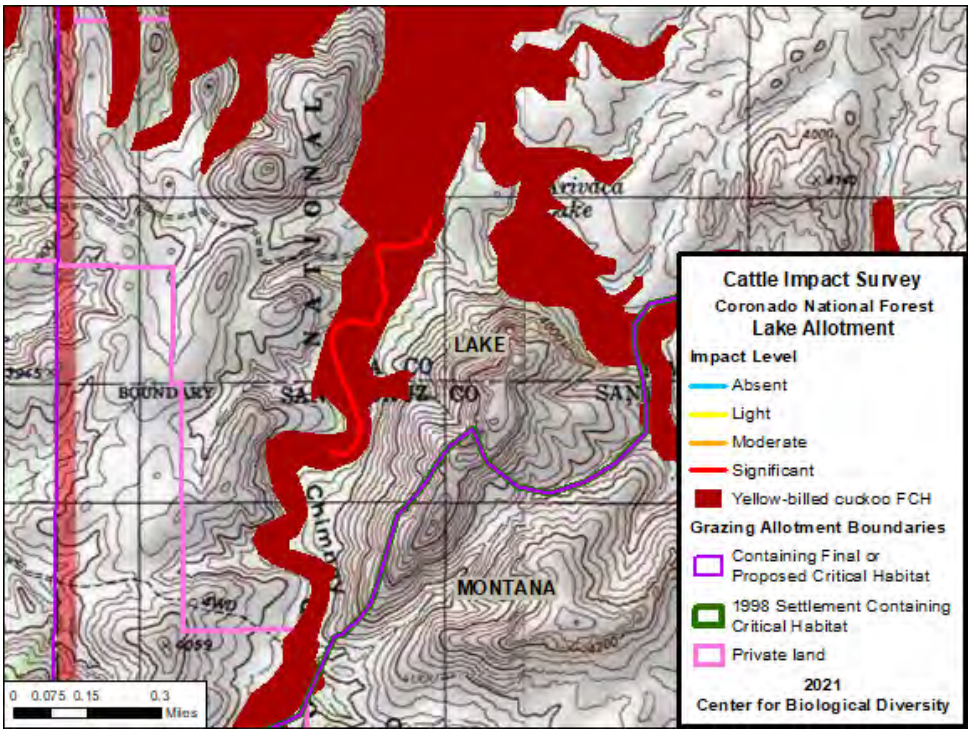


Figure A-3. Grazing impact levels in designated yellow-billed cuckoo critical habitat on the Lake allotment, Nogales Ranger District, Coronado National Forest.

The Lake allotment in Coronado National Forest contains Critical Habitat for Yellow-billed Cuckoo. Critical habitat for Yellow-billed Cuckoo inside of the Lake allotment was surveyed on 20 April 2021, beginning at the fence line between the allotment and state-managed Arivaca Lake. The fence is inadequate and is not preventing movement of cattle from one side to another. Significant grazing impacts and fecal deposits were recorded on both state and federal land from the same cattle herd. Unauthorized cattle have caused significant impacts around the southern shoreline of Arivaca Lake.

Inside the Lake allotment boundary (and contiguous with impacts at Arivaca Lake) abundant feces, ground disturbances and cattle trails were observed. Impact severity were characterized as significant along the Critical Habitat transect. Grasses and herbaceous growth were diminished. Trails, wallows, rutting and bare soils were observed. Multiple locations of ground cover disturbance were noted with multiple degrees of disturbances including moderate and significant.


Grazed Yellow-billed Cuckoo Critical Habitat in the Lake allotment, Coronado National Forest, Nogales Ranger District. Location 31.522707, -111.255929 (1) and 31.522799, -111.256037 (2), April 20, 2021.


Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Lake allotment, Coronado National Forest, Nogales Ranger District. 31.522167, -111.256208 (1) and 31.519924, -111.256122 (2), April 20, 2021.

Montana Allotment

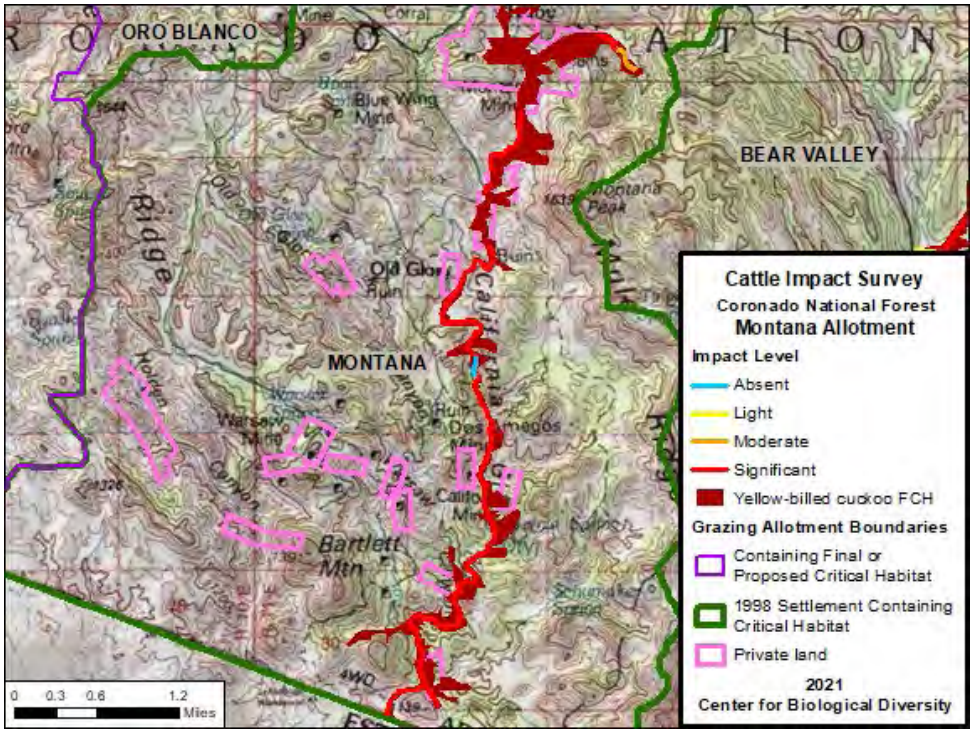


Figure A-4. Grazing impact levels in designated yellow-billed cuckoo critical habitat on the Montana allotment, Nogales Ranger District, Coronado National Forest.

The Montana Allotment in Coronado National Forest contains designated riparian Yellow-billed Cuckoo Critical Habitat. In May 2021, cattle impact surveys in Yellow-billed Cuckoo Critical Habitat were completed on the Montana allotment. These surveys were centered on two major local waterways: California Gulch, which flows south into Mexico, and Chimney Can Canyon, which flows north into Arivaca Lake (through the Lake allotment). Cattle impacts were significant in both drainages. Active grazing was occurring on both sections at the time of the surveys, which was the growing season for riparian vegetation.

California Gulch- Approximately 5 miles of transects were surveyed in California Gulch. Surveys were occasionally broken up by scattered private inholdings, including the townsite of Ruby, AZ. Many miles of California Gulch are ephemeral with gravel/cobble streambeds, and characterized by mesquite, seep willow, and the occasional riparian gallery forest. A few sections however have intermittent segments of spring-fed perennial water, which are characterized by cottonwoods, willow, and ash.

The majority of the waterway is ephemeral and was significantly impacted, but sections containing surface water were especially impacted as cattle sign was concentrated in these areas. While California Gulch contained numerous pools of perennial surface water even through an exceptional drought, cattle have been allowed to spend a disproportionate amount of time there even into the riparian growing season. These areas showed significant cattle impacts. Woody streamside recruitment was browsed, trails meandered throughout the riparian zone, and streamside impacts resulted in shearing of banks into vertical surfaces. Overall, the entire length of designated Yellow-billed Cuckoo critical habitat in California Gulch inside of the Montana Allotment was significantly impacted by cattle.

Chimney Can Canyon- Approximately three miles of Yellow-billed Cuckoo Critical Habitat were surveyed along Chimney Can Canyon on the Montana Allotment north of Ruby Road. Over 30 head of cattle were observed actively grazing here. This segment is primarily ephemeral and characterized by Madrean oak woodlands and riparian gallery forests. Two stock ponds (the Papago Tanks) are present in the canyon bottom. This canyon was significantly impacted by cows all the way to the boundary of the Lake allotment. Woody streamside recruitment was browsed, trails meandered throughout, and streamside impacts resulted in shearing of banks into vertical surfaces. Mesquite bosques were also impacted to the point that understory vegetation was effectively lacking. Overall, Yellow-billed Cuckoo Critical Habitat in the Montana Allotment is significantly impacted by cattle.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Montana Allotment, Coronado National Forest, Nogales Ranger District. 31.451484, -111.234569. May 5, 2021.

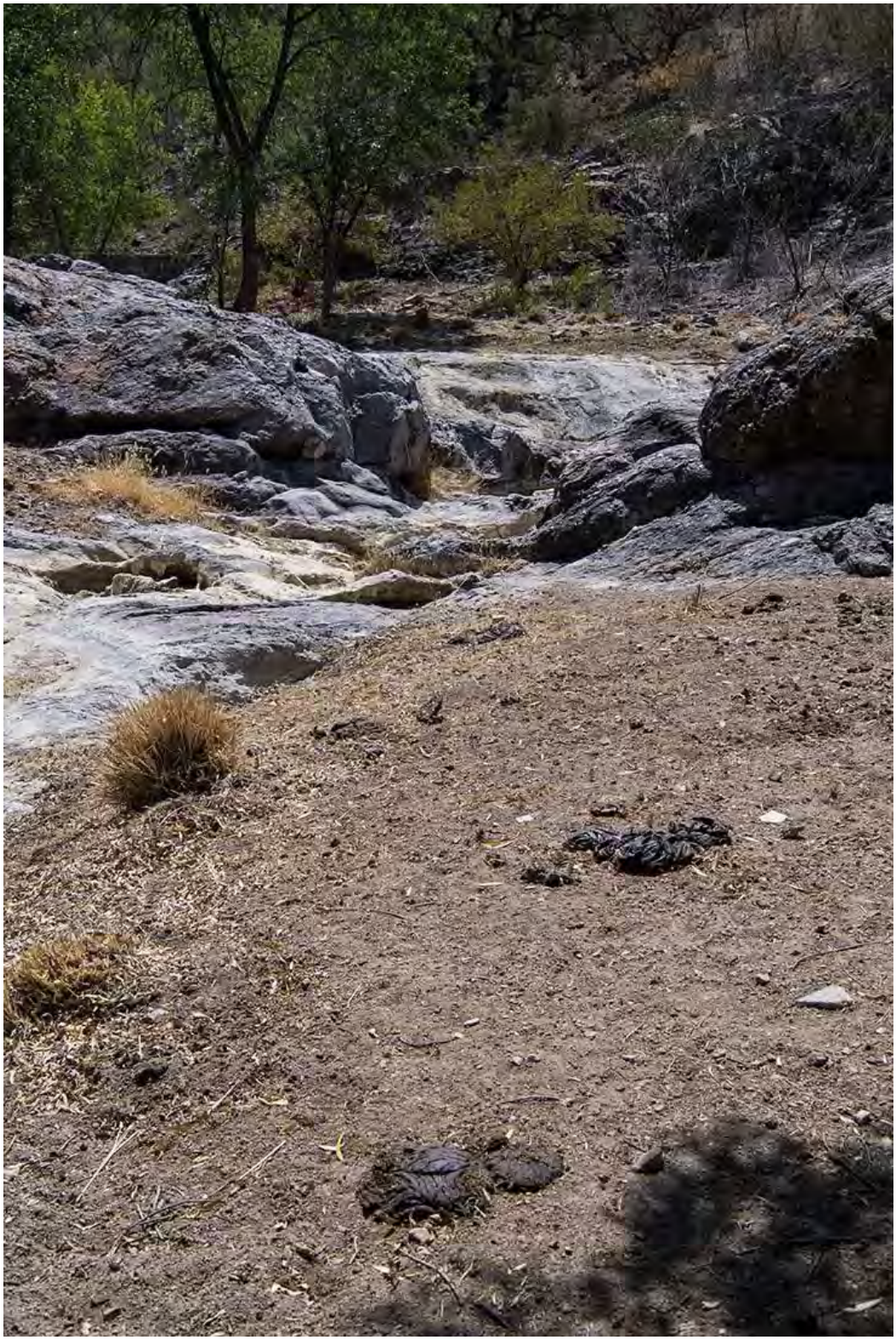
Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Montana Allotment, Coronado National Forest, Nogales Ranger District. 31.406589, -111.238603, May 5, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Montana Allotment, Coronado National Forest, Nogales Ranger District. 31.407762 -111.237659. May 5, 2021.

Grazed Yellow-billed Cuckoo riparian critical habitat in the California Gulch, Montana Allotment, Coronado National Forest, Nogales Ranger District. 31.410106, -111.238388, May 5, 2021.

Designated Yellow-billed Cuckoo riparian Critical Habitat inside Sonora Chub Exclosure, California Gulch, Coronado National Forest 31,24.3735N 111,14.3888W, June 1, 2021, © Robin Silver

Designated Yellow-billed Cuckoo riparian Critical Habitat inside Sonora Chub Exclosure, California Gulch, Montana Allotment, Coronado National Forest, 31,24.3804N 111,14.3519W, June 1, 2021, © Robin Silver



Designated Yellow-billed Critical Habitat, inside Sonora Chub Exclosure, California Gulch, Montana Allotment, Coronado National Forest, 31,24.3857N 111,14.3853W, June 1, 2021, © Robin Silver

Designated Yellow-billed Cuckoo riparian Critical Habitat inside Sonora Chub Exclosure, California Gulch, Montana Allotment, Coronado National Forest, 31,23.5371N 111,14.8017W, June 1, 2021, © Robin Silver

Designated Yellow-billed Cuckoo riparian Critical Habitat inside Sonora Chub Exclosure, California Gulch, Montana Allotment, Coronado National Forest, 31,23.5405N 111,14.8173W, June 1, 2021, © Robin Silver

Designated Yellow-billed Cuckoo riparian Critical Habitat, Montana Allotment, Coronado National Forest, 31,26.9355N 111,14.2473W, June 1, 2021, © Robin Silver

Designated Yellow-billed Cuckoo riparian Critical Habitat, Montana Allotment, Coronado National Forest, 31,27.0378N 111,14.0852W, June 1, 2021, © Robin Silver

Designated Yellow-billed Cuckoo riparian Critical Habitat, Montana Allotment, Coronado National Forest, 31,27.0976N 111,14.0829W, June 1, 2021, © Robin Silver

Grazed and stunted riparian tree in designated Yellow-billed Cuckoo Critical Habitat in California Gulch, Montana Allotment, Coronado National Forest, 31,24.4663N 111,14.2739W, November 21, 2021, © Robin Silver

Grazed and stunted trees in designated Yellow-billed Cuckoo riparian Critical Habitat, California Gulch, Montana Allotment, Coronado National Forest, 31,24.4721N 111,14.2644W November 21, 2021, © Robin Silver

Grazed Yellow-billed Cuckoo riparian Critical Habitat, California Gulch, Montana Allotment, Coronado National Forest, 31,24.4744N 111,14.25.97W, November 21, 2021, © Robin Silver

In addition to designated Yellow-billed Cuckoo riparian Critical Habitat, the Montana Allotment in Coronado National Forest also contains occupied Sonora Chub habitat. This Notice provides new information on the significant and destructive grazing pressure on resources pertaining to the Sonora Chub on the Montana allotment. We document significant cattle impacts inside of both Sonora Chub exclosures on this allotment. There is also new information regarding climate change and impacts associated with cross-border Department of Homeland Security (DHS) activities along the U.S. and Mexico border. All of this new information impacts Sonora Chub within their known range in the United States.

Grazing has known negative effects to Sonora Chub. According to the 2013 5-year review for Sonora Chub:

> "Some adverse impacts continue associated with cattle grazing, which have the potential of setting back recovery. The degradation, siltation, and water pollution caused primarily by livestock grazing within the riparian corridors remain threats in areas where grazing is not properly managed (USFWS 2012a). The Sonora chub prefers pools of clear water created by cliffs, boulders, and other cover in intermittent streams. It is difficult for cattle to reach areas like these, but upstream grazing can affect downstream habitat conditions. Grazing activities associated with the CNF's Rangeland Management Program may result

> in adverse effects to the Sonora chub's critical habitat. Livestock grazing activities can contribute to changes in surface runoff quantity and intensity, sediment transport, and water holding capabilities of the watershed (USFWS 2002, USFWS 2012a). This occurs especially where cattle tend to congregate, often near water sources (USFWS 2012a)."[410]

Furthermore, according to the 2019 Supplemental Finding for Sonora Chub:

> "The degradation, siltation, and water pollution caused primarily by livestock grazing within the riparian corridors, road construction, runoff from roads, construction of infrastructure, and repair of infrastructure, human use, and mining operations are determined to have potential adverse effects on the Sonora chub.[411]

Because of these known negative effects of grazing on Sonora chub recovery, the 2013 5-year review for Sonora Chub ***anticipated take of all Sonora Chub outside of riparian exclosures*** on the Montana allotment due to authorized cattle grazing.

> "Our June 6, 2001, biological opinion (and June 12, 2001, amendment) on the renewal of the Coronado National Forest's Montana Allotment grazing management plan determined that the proposed action would reduce, but not eliminate, the adverse effects of livestock grazing to Sonora chub in California Gulch and Warsaw Canyon, a tributary stream. We anticipated that implementation of grazing under the proposed action would incidentally take all Sonora chub in the 2.8 km (1.75 mi) of unprotected, occupied habitat subject to grazing impacts. The Coronado National Forest's 2010 Annual Monitoring Report (USFS 2011b) includes post-project monitoring in association with this biological opinion and noted that the species was still present in California Gulch. The USFWS thus assumes these individuals are still being incidentally taken by continuing livestock grazing; however the population is sufficiently protected to allow for the fish in the area to reproduce and sustain the population's numbers"[412]

We observed dysfunctional grazing exclosures on the Montana Allotment, both of which have been penetrated by cattle and impacts were observed throughout both Sonora chub exclosures (riparian grazing, fecal loads, ground disturbances).

[410] 2013 Sonora chub 5-year review pg. 16.

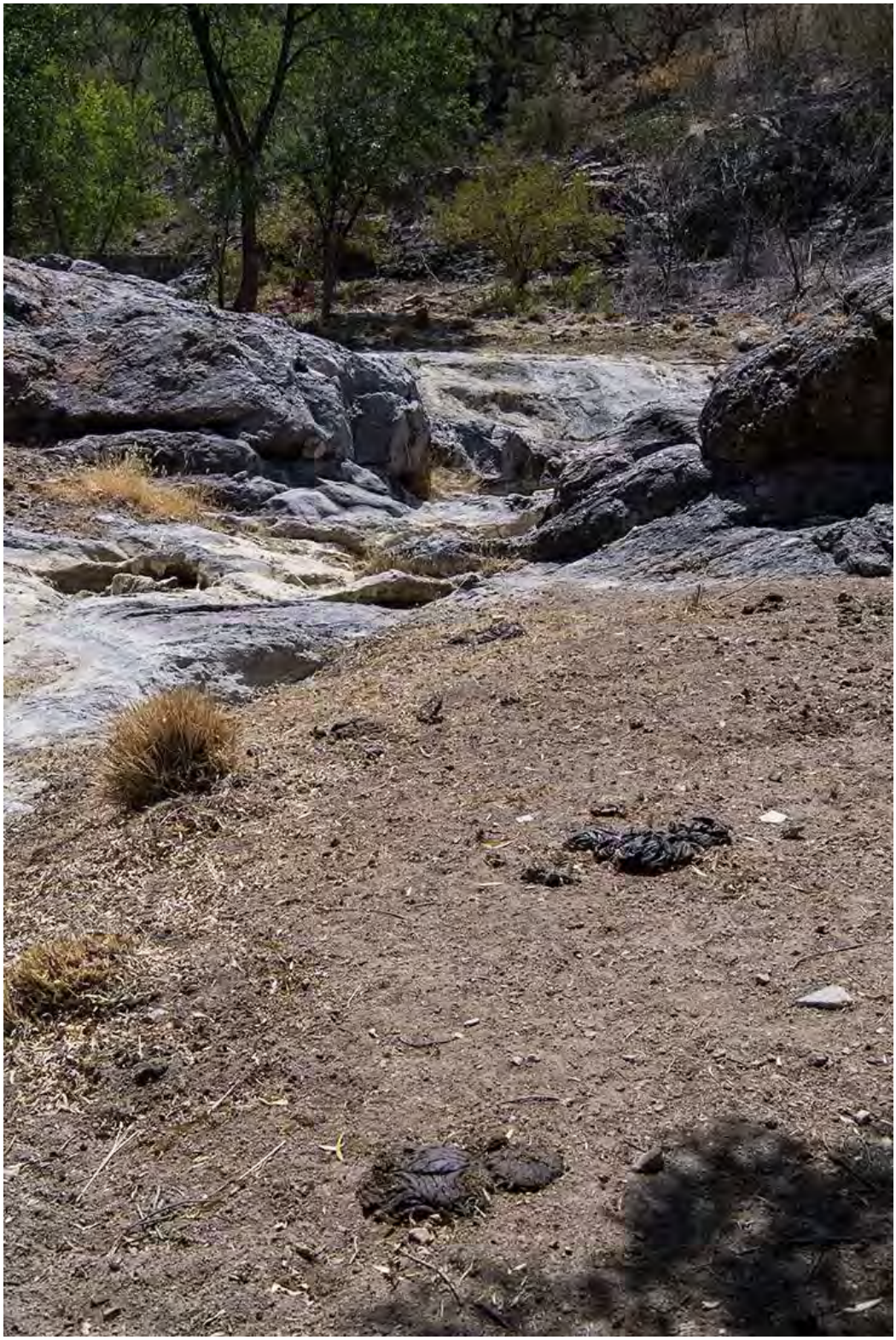
[411] 2019 Supplemental finding pg. 7.

[412] 2013 Sonora chub 5-year review pg. 25.

The following images were made of the habitat within the Sonora Chub exclosures on the dates noted:

Grazed Yellow-billed Cuckoo riparian Critical Habitat inside Sonora Chub Exclosure, California Gulch, Coronado National Forest 31,24.3735N 111,14.3888W, June 1, 2021, © Robin Silver

Grazed Yellow-billed Cuckoo riparian Critical Habitat inside Sonora Chub Exclosure, California Gulch, Montana Allotment, Coronado National Forest, 31,24.3804N 111,14.3519W, June 1, 2021, © Robin Silver



Designated Yellow-billed Critical Habitat, inside Sonora Chub Exclosure, California Gulch, Montana Allotment, Coronado National Forest, 31,24.3857N 111,14.3853W, June 1, 2021, © Robin Silver

Designated Yellow-billed Cuckoo riparian Critical Habitat inside Sonora Chub Exclosure, California Gulch, Montana Allotment, Coronado National Forest, 31,23.5371N 111,14.8017W, June 1, 2021, © Robin Silver

Designated Yellow-billed Cuckoo riparian Critical Habitat inside Sonora Chub Exclosure, California Gulch, Montana Allotment, Coronado National Forest, 31,23.5405N 111,14.8173W, June 1, 2021, © Robin Silver

Additionally, CNF and the USFWS agreed to establish a buffer area around waterways to prevent the entry of toxic fire retardant into Sonora Chub habitat (USFWS 2011a).[413] We observed no evidence of such a buffer area and are concerned that, following the recent 2021 Warsaw Fire, toxic retardant will be flowing into potentially occupied habitat following the first rain of the season.

According to the 2021 Biological Opinion for Ongoing Grazing on the Coronado National Forest,

> "2. For the general on-going livestock grazing and its management, take will be considered to have been exceeded if exclosure fencing inspections and repairs are not conducted and implemented within two weeks of observation as specified in Conservation Measure 20.
>
> 3. For the general on-going livestock grazing and its management, all Sonora chub outside of exclosures may be taken through harm from livestock grazing. In addition, direct take of Sonora chub will occur when livestock are in occupied habitat. Take will be considered to have been exceeded if the following conditions occur:
>
> > a. Livestock grazing occurs within a pasture containing occupied habitat resulting in use measured at a level higher than authorized for that specific pasture in any two of three subsequent monitoring events. Forage utilization will be measured and analyzed in accordance with Forest Service policy as described in the proposed action. Exceeding these levels of forage utilization will result in unacceptable impacts to occupied habitat and individual Sonora chub."[414]

Take appears to have been exceed here even with the Coronado National Forest's inadequate cow utilization management scheme. This Notice, along with the Center's November 22, 2021, site visit with USFS staff, documents damaged exclosure fencing, livestock intrusion, unauthorized use by cattle, and detrimental variations from proposed actions on the Montana allotment. We believe that the Shumacher pasture in California Gulch, the location of the site visit on November 22, 2021, has far exceeded riparian use limits (woody browse under 6' capped at 30%, and deergrass left at 14" stubble)[415] for nearly one continuous year. Even under current allowances by the Coronado National Forest, the Shumacher pasture receives 3 months of grazing followed by 21 months of rest. This certainly seems to justify over 5 full years of rest and recovery even under current policy; however, we believe that cows should be permanently excluded from this riparian pasture.

[413] 2019 Sonora chub Supplemental finding pg. 4.

[414] September 30, 2021, Biological Opinion on Ongoing Grazing on the Coronado National Forest, p. 78.

[415] December 2, 2021, email correspondence from Coronado National Forest Acting Supervisor Kurt Davis.

Greaterville Allotment

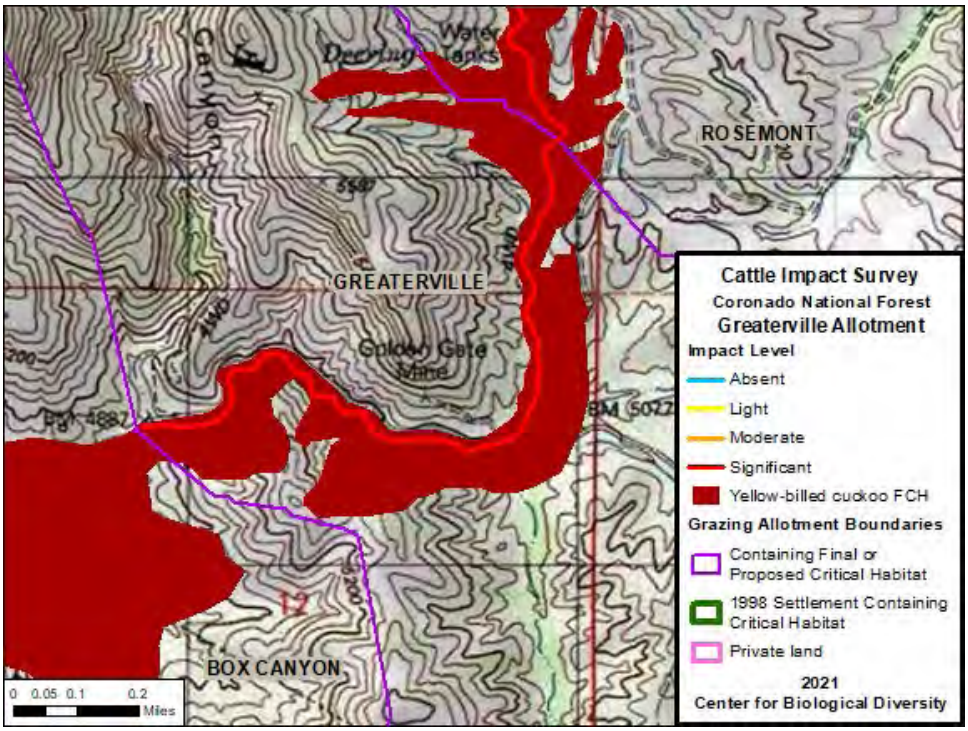


Figure A-5. Grazing impact levels in designated yellow-billed cuckoo critical habitat on the Greaterville allotment, Nogales Ranger District, Coronado National Forest.

The Greaterville allotment contains designated Chiricahua leopard frog and Yellow-billed cuckoo critical habitat. We surveyed both designations, but leopard frog designated critical breeding ponds and riparian streams were un-grazed by cattle. The un-grazed pond and stream are shown below for reference.

An un-grazed Chiricahua Leopard Frog Critical Habitat breeding pond north of Ophir Gulch, Greaterville allotment, Coronado National Forest, Nogales Ranger District. 31.76750, -110.75969, September 1, 2020.

An un-grazed Chiricahua Leopard Frog Critical Habitat riparian stream north of Ophir Gulch, Greaterville allotment, Coronado National Forest, Nogales Ranger District. 31.76741, -110.75768, September 1, 2020.

Yellow-billed Cuckoo Critical Habitat in the Greaterville Allotment was surveyed on May 6, 2021. These areas were distinct from CLF Critical Habitat. Approximately 1.5 miles of Yellow-billed Cuckoo Critical Habitat were surveyed for cattle impacts on the Greaterville Allotment. This stretch is primarily a sandy wash in Madrean oak woodlands; it is the headwaters of Box Canyon. It is contiguous with Yellow-billed Cuckoo Critical Habitat on the adjacent Box Canyon and Rosemont allotments, which were also surveyed by the Center. Cattle impacts on the Greaterville allotment were pervasive in frequency and ranged from significant to moderate in severity. Impacts were most apparent nearest the Greaterville/ Box Canyon boundary, where a functioning water trough can be found. Numerous occurrences of unfunctional fencing were documented. The fencing between Greaterville, Rosemont and Box Canyon allotments was dysfunctional, and cattle appeared to be moving freely across these boundaries.

Significant cattle impacts were found throughout and removal of understory vegetation in riparian habitats resulted in dust bowl conditions. Such impacts diminish the capacity of these areas to support breeding Yellow-billed Cuckoo inside of their designated Critical Habitat.

Grazed Yellow-billed cuckoo riparian critical habitat in the Greaterville allotment, Coronado National Forest, Nogales Ranger District. 31.800448, -110.768054, May 6, 2021.

Grazed Yellow-billed Cuckoo critical habitat in the Greaterville allotment, Coronado National Forest, Nogales Ranger District. 31.801725, -110.758055, May 6, 2021.

Grazed Yellow-billed cuckoo critical habitat in the Greaterville allotment, Coronado National Forest, Nogales Ranger District, 31.801178, -110.756553. May 6, 2021.

Broken fencing in grazed Yellow-billed cuckoo riparian critical habitat, Greaterville allotment, Coronado National Forest, Nogales Ranger District. 31.800886, -110.757153, May 6, 2021.

Grazed Yellow-billed cuckoo riparian critical habitat in the Greaterville allotment, Coronado National Forest, Nogales Ranger District. 31.805773, -110.757754. May 6, 2021.

Box Canyon Allotment

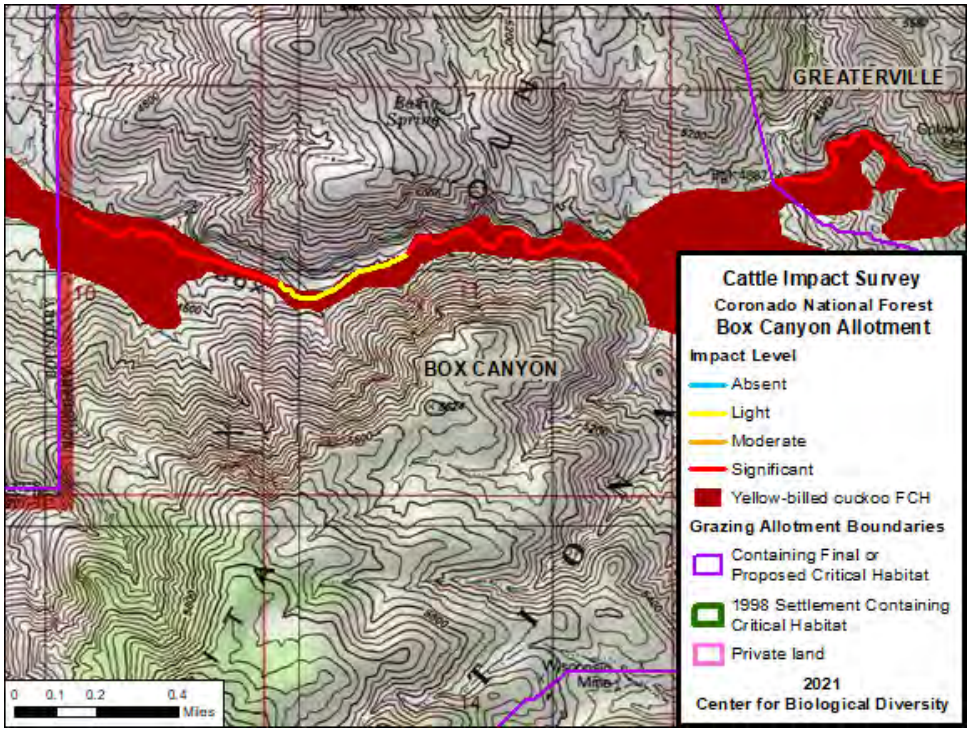


Figure A-6. Grazing impact levels in designated yellow-billed cuckoo critical habitat on the Box Canyon allotment, Nogales Ranger District, Coronado National Forest.

Yellow-billed Cuckoo Critical Habitat in the Box Canyon Allotment was surveyed on 22 April 2021. Near the boundary with the Greaterville Allotment significant cattle impacts were common, and removal of understory vegetation in riparian habitats resulted in dust bowl conditions. This area of designated Yellow-billed Cuckoo Critical Habitat was a significantly impacted riparian area. Specific Critical Habitat features vital to Yellow-billed Cuckoos appeared diminished.

Continued significant impacts were noted further downstream inside of Box Canyon. Along this survey ground disturbances were pervasive. Where grass was diminished cattle appeared to have switched to browsing woody vegetation, which was also significantly impacted. Several large *Opuntia* spp. cacti were uprooted as well, as cattle appeared to be consuming this food resource after grass removal. As a whole, Yellow-billed Cuckoo Critical Habitat inside of the Box Canyon Allotment exhibited a high degree of ground disturbances, grass removal, and fecal loads. Such impacts have diminished the value of this habitat for breeding cuckoos.

One short section of the allotment in Box Canyon naturally excludes cattle via terrain, and dramatic differences were observed between this and other survey segments at this location. Riparian vegetation was actively growing and bunch grasses were intact. Only older transient cattle sign was observed here.


Grazed Yellow-billed cuckoo riparian critical habitat in the Box Canyon allotment, Coronado National Forest, Nogales Ranger District. 31.798128, -110.776243 (1), 31.798316, -110.777344 (2), April 22, 2021.


Grazed Yellow-billed cuckoo riparian critical habitat in the Box Canyon allotment, Coronado National Forest, Nogales Ranger District. 31.79838, -110.777484, April 22, 2021.


Grazed Yellow-billed cuckoo riparian critical habitat in the Box Canyon allotment, Coronado National Forest, Nogales Ranger District. 31.799277, -110.79769 (1), 31.799094, -110.797497 (2), April 22, 2021.


Grazed Yellow-billed cuckoo riparian critical habitat in the Box Canyon allotment, Coronado National Forest, Nogales Ranger District. 31.798757, -110.796327, April 22, 2021.


Grazed Yellow-billed cuckoo riparian critical habitat in the Box Canyon allotment, Coronado National Forest, Nogales Ranger District. 31.798821, -110.795287 (1), 31.798867-110.795469 (2), April 22, 2021.


Un-grazed section of Yellow-billed cuckoo riparian critical habitat in the Box Canyon allotment, Coronado National Forest, Nogales Ranger District. The terrain naturally excluded cattle (note presence of streamside grasses). 31.796411, -110.788581 (1), 31.796556-110.788077 (2), April 22, 2021.

Rosemont Allotment

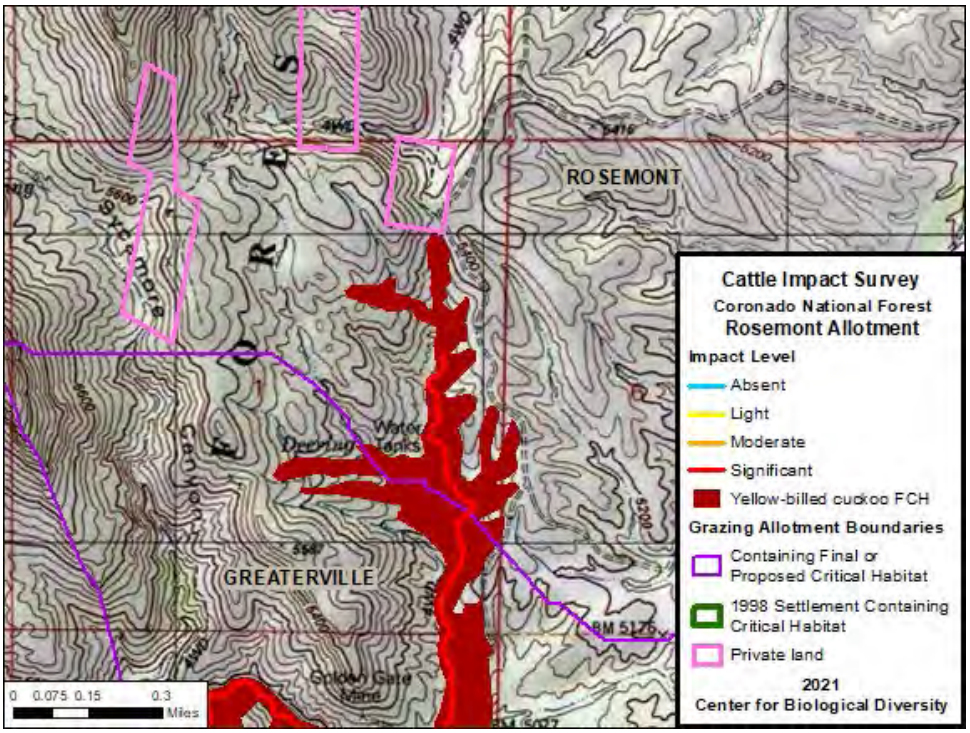


Figure A-7. Grazing impact levels in designated yellow-billed cuckoo critical habitat on the Rosemont allotment, Nogales Ranger District, Coronado National Forest.

The Rosemont allotment in Coronado National Forest, Nogales Ranger District contains Yellow-billed Cuckoo Critical Habitat. Approximately 0.25 miles of Yellow-billed Cuckoo Critical Habitat in the Rosemont allotment was surveyed for cattle impacts on May 6, 2021. Near the boundary with the Greaterville Allotment, cattle trails and bank degradation were observed, as was removal of understory vegetation in riparian habitats. The fence line between the adjacent Greaterville Allotment and Rosemont Allotment was down and cattle impact severity and frequency continued across this dysfunctional boundary. Impacts were significant/moderate in severity, moderately pervasive, and were beginning to decrease in both metrics towards the end of the transect.

Grazed Yellow-billed Cuckoo Critical Habitat in the Rosemont allotment, Coronado National Forest, Nogales Ranger District. 31.80767, -110.75857, May 6, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the Rosemont allotment, Coronado National Forest, Nogales Ranger District 31.809092, -110.758484, May 6, 2021.

Oak Tree Allotment

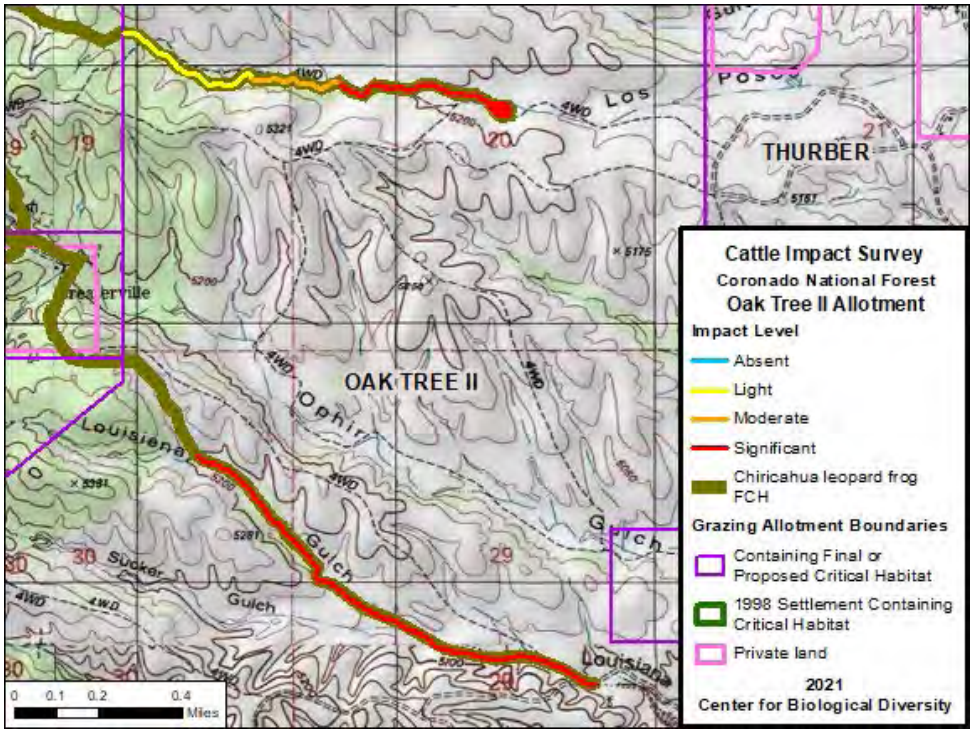


Figure A-8. Grazing impact levels in designated Chiricahua leopard frog critical habitat on the Oak Tree allotment, Nogales Ranger District, Coronado National Forest.

The Oak Tree Allotment in Coronado National Forest Nogales Ranger District contains two reaches of designated Chiricahua Leopard Frog Critical Habitat, one in Los Posos Gulch and one in Louisiana Gulch to the south. Both stretches of Chiricahua Leopard Frog Critical Habitat on the Oak Tree Allotment are completely dry and significantly impacted by cattle. High concentrations of cattle feces were observed through both stream segments of critical habitat, neither of which contained any standing water. Immediate creek drainages and adjacent areas throughout the width of both gulches were significantly impacted and defecated upon by cattle. The stream at Louisiana Gulch contained no water for miles and exhibited a very high concentration of cow feces.

The Critical Habitat "pond" in Louisiana Gulch consists of a single metal cattle trough that stands between 2 to 3 feet off the ground, situated within a fenced cattle corral. In Los Posos Gulch, both the stream and stock pond were highly contaminated with cattle excrement and ground disturbances. No amphibian life was observed. The critical habitat ponds on the Oak Tree Allotment are currently not suitable to sustain amphibian populations.


Grazed Chiricahua Leopard Frog Critical Habitat breeding pond at Los Posos, Oak Tree allotment, Coronado National Forest, Nogales Ranger District. 31.76846, -110.73159, September 1, 2020.

Grazed Chiricahua Leopard Frog Critical Habitat breeding pond at Los Posos, Oak Tree allotment, Coronado National Forest Nogales Ranger District. 31.76846, -110.73159, September 1, 2020.

Grazed Chiricahua Leopard Frog Critical Habitat breeding pond at Los Posos Gulch, Oak Tree allotment, Coronado National Forest, Douglas Ranger District. 31.76846, -110.73159, September 1, 2020.

Grazed Chiricahua Leopard Frog Critical Habitat streams in the Oak Tree allotment, Coronado National Forest, Nogales Ranger District. September 1, 2020.

Previously grazed Chiricahua Leopard Frog Critical Habitat riparian streams in Louisiana Gulch, Oak Tree allotment, Coronado National Forest Nogales Ranger District. September 1, 2020.

Chiricahua Leopard Frog Critical Habitat breeding pond within a cattle-holding pen at Louisiana Gulch, Oak Tree allotment, Coronado National Forest Nogales Ranger District. 31.74862, -110.72803, September 1, 2020.

Peloncillo Allotment

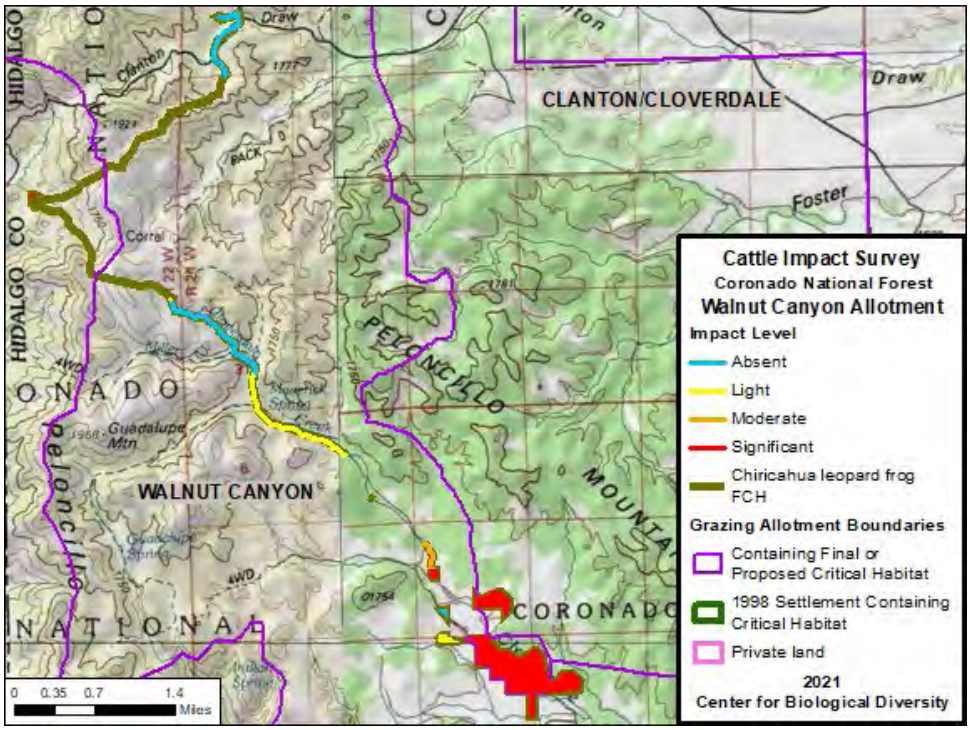


Figure A-9. Grazing impact levels in designated Chiricahua leopard frog critical habitat on the Peloncillo (Walnut Canyon) and Clanton/Cloverdale allotments, Douglas Ranger District, Coronado National Forest.

Chiricahua Leopard Frog Critical Habitat on the Peloncillo allotment (formerly Walnut or Walnut Canyon) consists of two unnamed ponds, an unnamed spring, and several sections of the historic Cloverdale Cienega. The bulk of the designated critical habitat is situated in between the Walnut and Clanton/Cloverdale allotments, but no boundary fences were observed that would restrict cattle movement across allotments. Within the historic cienega, the lower creek has been impacted by the channelization of the upper creek and the installation of the levees. This has resulted in less water from flood events being stored in the ciénegas and creek system.

Combined with past and present livestock grazing, this has resulted in a moderately incised channel that starts at approximately 10-feet deep and ends with a 1- to 2-foot incision at the bottom. This incision has disconnected the creek from its floodplain and the adjacent lower ciénega, and the wetland has dried extensively.

One of the two ponds, closest to the historic Cienega, was significantly impacted and contaminated by cattle feces. The other pond, further removed and at a higher elevation, was untrampled. In the historic Cienega, there were signs of cattle use throughout the channel that cuts through the center of large critical habitat area. Cattle feces were abundant in the stream bed and stream banks were eroded. Cattle impacts were observed throughout surrounding grassland. Feces, trails, and wallows were abundant. Cows were present during the survey. No standing water was found in the historic cienega. No Chiricahua leopard frogs were observed.

Grazed Chiricahua Leopard Frog Critical Habitat within the historic Cloverdale Cienega on the Peloncillo allotment, Coronado National Forest, Douglas Ranger District. November 2, 2020.




Grazed Chiricahua Leopard Frog Critical Habitat in the historic Cloverdale Cienega on the Peloncillo allotment, Coronado National Forest, Douglas Ranger District. November 2, 2020.




Grazed Chiricahua Leopard Frog Critical Habitat breeding pond in the Peloncillo allotment, Coronado National Forest, Douglas Ranger District. 31.449986, -108.987567, November 2, 2020.

Clanton/ Cloverdale Allotment

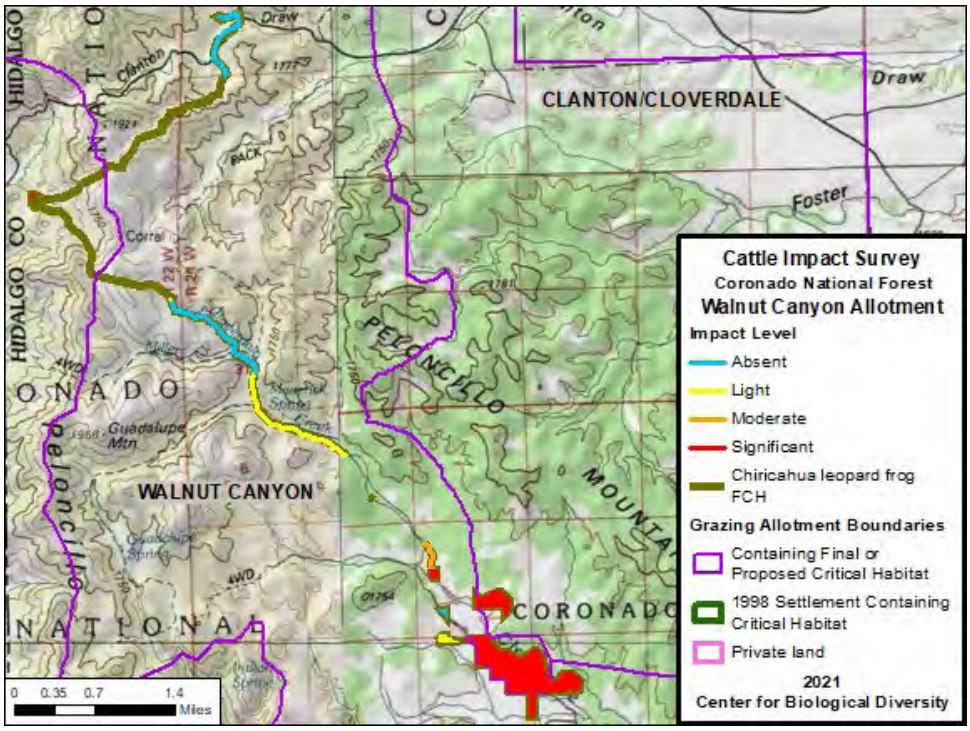


Figure A-9. Grazing impact levels in designated Chiricahua leopard frog critical habitat on the Peloncillo (Walnut Canyon) and Clanton/Cloverdale allotments, Douglas Ranger District, Coronado National Forest.

The Clanton/ Cloverdale allotment contains critical habitat for Chiricahua leopard frogs. While the majority of the historic Cloverdale Cienega occurs on the adjacent Peloncillo allotment, a small section of section of this former wetland occurs within the boundaries of the Clanton/Cloverdale allotment. No standing water was observed on this allotment.

Cattle impacts were prevalent throughout the designated critical habitat on this allotment. Feces, tracks, trails, wallows, and grazing impacts were consistently observed. No boundary fences were observed between the Clanton/Cloverdale allotment and the Peloncillo allotment.

Previously grazed Chiricahua Leopard Frog Critical Habitat within the historic Cloverdale Cienega on the Clanton/Cloverdale allotment, Douglas Ranger District. 31.446278, -108.979938. November 2, 2020.

Geronimo Allotment

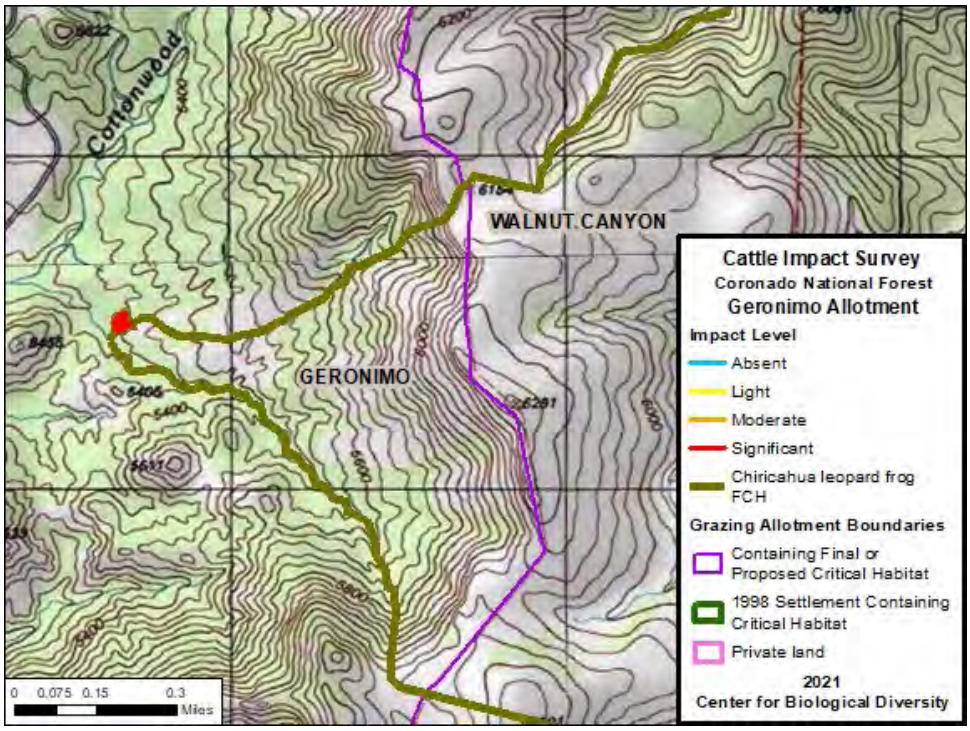


Figure A-10. Grazing impact levels in designated Chiricahua leopard frog critical habitat on the Geronimo allotment, Douglas Ranger District, Coronado National Forest.

Chiricahua Leopard Frog Critical Habitat in the Geronimo allotment consists of one unnamed pond. There are many well-used cattle trails meandering towards the pond. Signs of significant cattle use surrounded the water source. Cattle feces were abundant along the pond shoreline and surrounding the pond complex. Ground disturbances from cattle were significant in the pond vicinity.

Grazed Chiricahua Leopard Frog Critical Habitat breeding pond on the Geronimo allotment, Coronado National Forest, Douglas Ranger District. 31.498648, -109.046028, November 1, 2020.

Santa Cruz Allotment

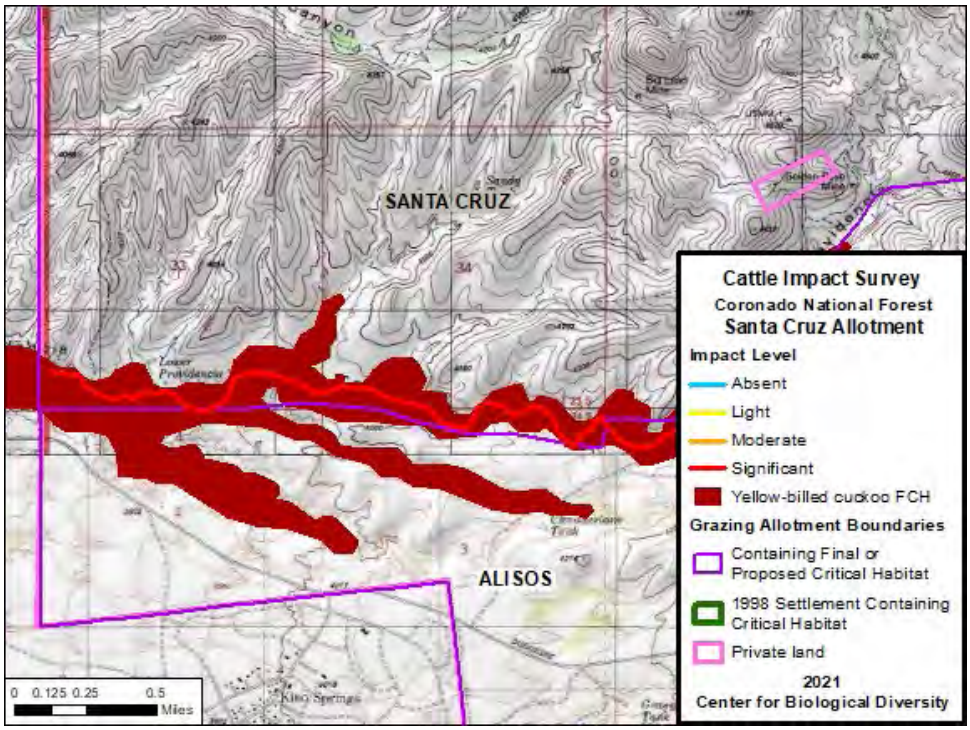


Figure A-11. Grazing impact levels in designated yellow-billed cuckoo critical habitat on the Santa Cruz allotment, Sierra Vista Ranger District, Coronado National Forest.

The Santa Cruz allotment occurs in the Patagonia Mountains, Sierra Vista Ranger District, Coronado National Forest. In this allotment, Providencia Canyon converges with Sycamore Canyon and drains along the western slope of the Patagonia Mountains in the Rio Santa Cruz watershed. Approximately 2.5 miles of Yellow-billed Cuckoo Critical Habitat were surveyed along this ephemeral waterway. The flora is generally characterized by the mesquite/desert willow community; riparian vegetation is predominately seep willow and ash. The stream channel is comprised of a series of braided ephemeral washes, broad floodplains, and of loose, granitic alluvium.

The Santa Cruz allotment interfaces with the Alisos allotment within Yellow-billed Cuckoo habitat; a functional fence line crosses the wash and separates the two at the start of a transect. Providencia Canyon was characterized by significant cattle impacts. Cattle impacts were significant from the eastern allotment boundary to private property on the western boundary. Such impacts diminish the value of this habitat for breeding cuckoos. Within the allotment, a fence line crosses the wash and is gated in the upland terraces; the fence line is standing; however, the bottom two rails of barbed wire are missing and a cattle trail passes directly underneath. A herd of cattle was seen at the end of the survey area, nearest the private property.

An open fence in grazed Yellow-billed Cuckoo Critical Habitat on the Santa Cruz allotment, Coronado National Forest Sierra Vista Ranger District. 31.378821, -110.809118, June 5, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat on the Santa Cruz allotment, Coronado National Forest, Sierra Vista Ranger District. 31.377923, -110.818988, June 5, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat on the Santa Cruz allotment, Coronado National Forest, Sierra Vista Ranger District. 31.378381, -110.823001, June 5, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat on the Santa Cruz allotment, Coronado National Forest, Sierra Vista Ranger District. 31.378253, -110.80521, June 5, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat on the Santa Cruz allotment, Coronado National Forest, Sierra Vista Ranger District. 31.377556, -110.802101, June 5, 2021.

Alisos Allotment

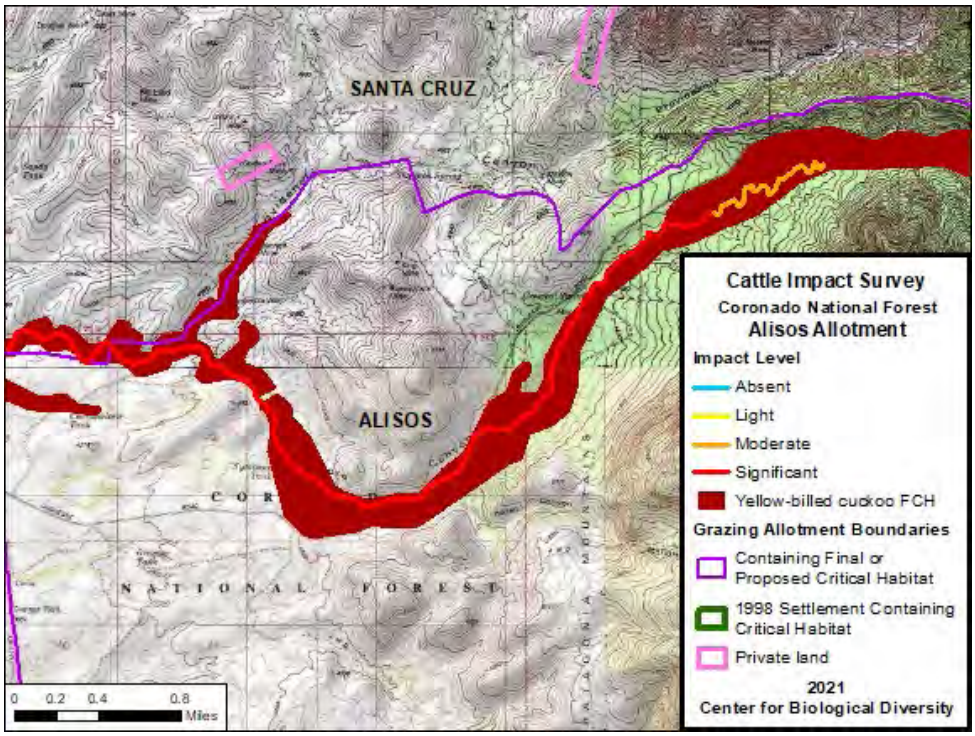


Figure A-12. Grazing impact levels in designated yellow-billed cuckoo critical habitat on the Alisos allotment, Sierra Vista Ranger District, Coronado National Forest.

The Alisos allotment in Coronado National Forest, Sierra Vista Ranger District Yellow-billed Cuckoo Critical Habitat in Sycamore Canyon which drains along the western slope of the Patagonia Mountains in the Rio Santa Cruz watershed. Approximately 4.5 miles of Yellow-billed Cuckoo Critical Habitat were surveyed along this ephemeral waterway. At lower elevations vegetation is characterized by the mesquite/desert willow community; this transitions into Madrean oak/juniper woodlands as elevation is gained towards the headwaters. Riparian vegetation is characterized by seep willow and ash. The stream channel is primarily a broad, sandy wash, which occasionally constricts within narrow, granite gorges for a few hundred feet. The only surface water observed was seen in deep holes dug in the granite gorges by animals and in a small cave/mine entrance excavated by people.

This allotment interfaces with the Santa Cruz allotment within Yellow-billed Cuckoo Critical Habitat. Cattle impacts were predominately significant. As the flora and terrain transitioned upstream, impacts began to decrease in severity and frequency, becoming increasingly transient. Impacts were both old and recent indicating sustained cattle presence.

A fence line at 31.366365, -110.772803 crosses the wash and shows evidence of recent maintenance; however, impact severity/frequency is the same on both sides. Impact severity appears more recent downstream; this observation is supported by a herd of ~50 cattle which were documented near a water trough and corral 0.25 mi downstream of this fence line. Another pair of fence lines in close proximity appeared to be an enclosure meant to keep cattle out of a short stretch of a granite gorge, which held water in an old mine passage and likely holds water seasonally in pools. The downstream fence line of the pair can be seen at 31.380169, -110.751592. These fence lines do not appear functional. Cattle impacts have diminished the value of this habitat for breeding cuckoos.

Grazed Yellow-billed Cuckoo riparian Critical Habitat on the Aliso allotment, Coronado National Forest, Sierra Vista Ranger District. 31.382255, -110.749616, June 5, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat on the Aliso allotment, Coronado National Forest, Sierra Vista Ranger District. 31.381339, -110.750495, June 5, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat on the Aliso allotment, Coronado National Forest, Sierra Vista Ranger District. 31.368387, -110.761332, June 5, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat on the Aliso allotment, Coronado National Forest, Sierra Vista Ranger District. 31.374405, -110.779023, June 5, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat on the Aliso allotment, Coronado National Forest, Sierra Vista Ranger District. 31.375138, -110.781845, June 5, 2021.

Lewis Allotment

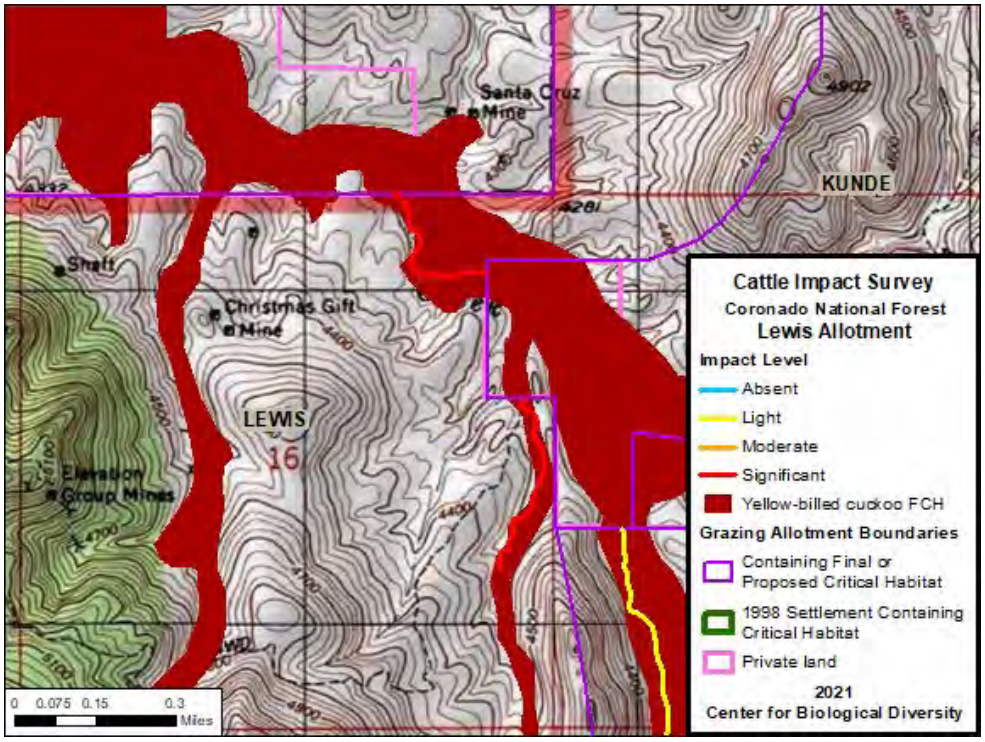


Figure A-13. Grazing impact levels in designated yellow-billed cuckoo critical habitat on the Lewis allotment, Sierra Vista Ranger District, Coronado National Forest.

The Lewis allotment in Coronado National Forest, Sierra Vista Ranger District contains designated Yellow-billed Cuckoo Critical Habitat. Approximately 0.6 miles of Yellow-billed Cuckoo Critical Habitat was surveyed on the Lewis allotment, along Harshaw creek and an associated tributary. Harshaw Creek is a wide, sandy wash comprised of loose granitic alluvium; the tributary that was surveyed is narrower with exposed bedrock. Woody vegetation throughout the survey area was primarily mesquite and desert willow.

Cattle impacts in terms of grazing intensity in Harshaw creek were frequently significant, while ground disturbances and streambank degradation varied from moderate to light depending on location. Cattle trails meandered throughout the survey area. Such impacts have diminished the value of this habitat for breeding cuckoos.

A cattle trail in Yellow-billed Cuckoo Critical Habitat in the Lewis allotment, Coronado National Forest, Sierra Vista Ranger District. 31.526889, -110.711121, June 4, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Lewis allotment, Coronado National Forest, Sierra Vista Ranger District. 31.519682, -110.709275, June 4, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the Lewis allotment, Coronado National Forest, Sierra Vista Ranger District. 31.520267, -110.708975, June 4, 2021.

McFarland Allotment

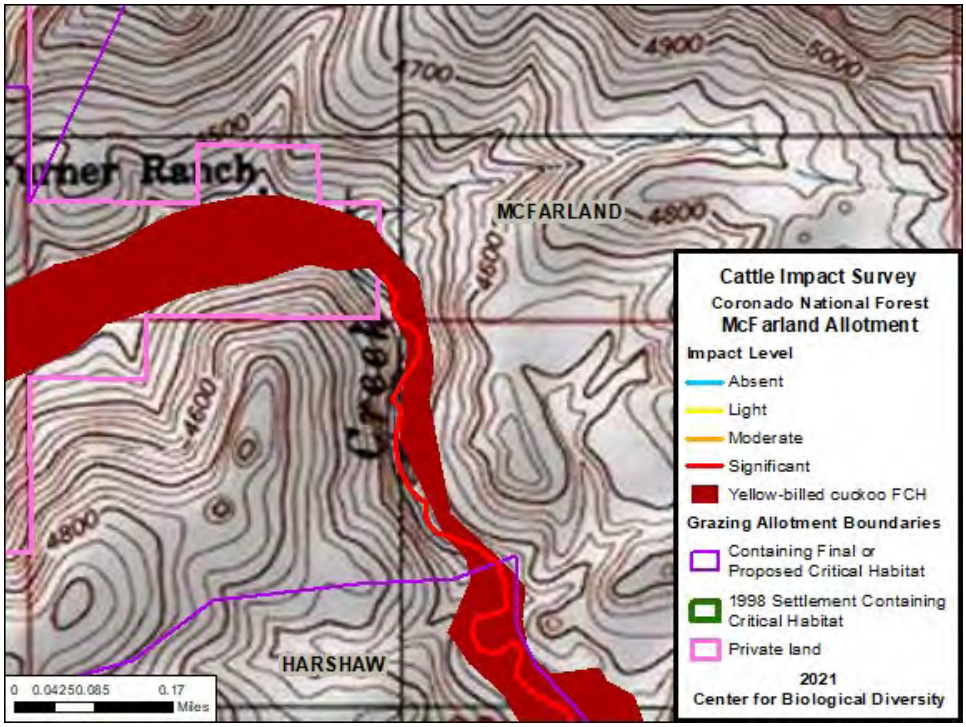


Figure A-14. Grazing impact levels in designated yellow-billed cuckoo critical habitat on the McFarland allotment, Sierra Vista Ranger District, Coronado National Forest.

Yellow-billed Cuckoo Critical Habitat in Harshaw Creek extends into the McFarland allotment, Coronado National Forest, Sierra Vista Ranger District. Approximately 0.4 miles of Yellow-billed Cuckoo Critical Habitat was surveyed along Harshaw Creek on the McFarland allotment. The McFarland allotment interfaces with the Harshaw allotment and Yellow-billed Cuckoo Critical Habitat is continuous across these two allotments boundaries along Harshaw Creek. The vegetation is characterized by mesquite/desert willow in the uplands and along drier stretches of creek and cottonwood/willow gallery forests on more-mesic stretches. At the allotment interface a short section of seemingly perennial flow moves across the boundary.

Harshaw Creek is defined by significant cattle impacts. The fence line at the McFarland/ Harshaw allotment boundary is downed and dysfunctional where it crosses the creek; cattle impact severities are equal on either side. This important, perennial water source is significantly impacted by cattle. Such impacts have diminished the value of this habitat for breeding cuckoos.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the McFarland allotment, Coronado National Forest, Sierra Vista Ranger District. 31.5107, -110.682453, June 3, 2021.

.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the McFarland allotment, Coronado National Forest, Sierra Vista Ranger District. 31.511725, -110.683633, June 3, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the McFarland allotment, Coronado National Forest, Sierra Vista Ranger District. 31.512859, -110.68402, June 3, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the McFarland allotment, Coronado National Forest, Sierra Vista Ranger District. 31.5152, -110.684363, June 3, 2021.

Harshaw Allotment

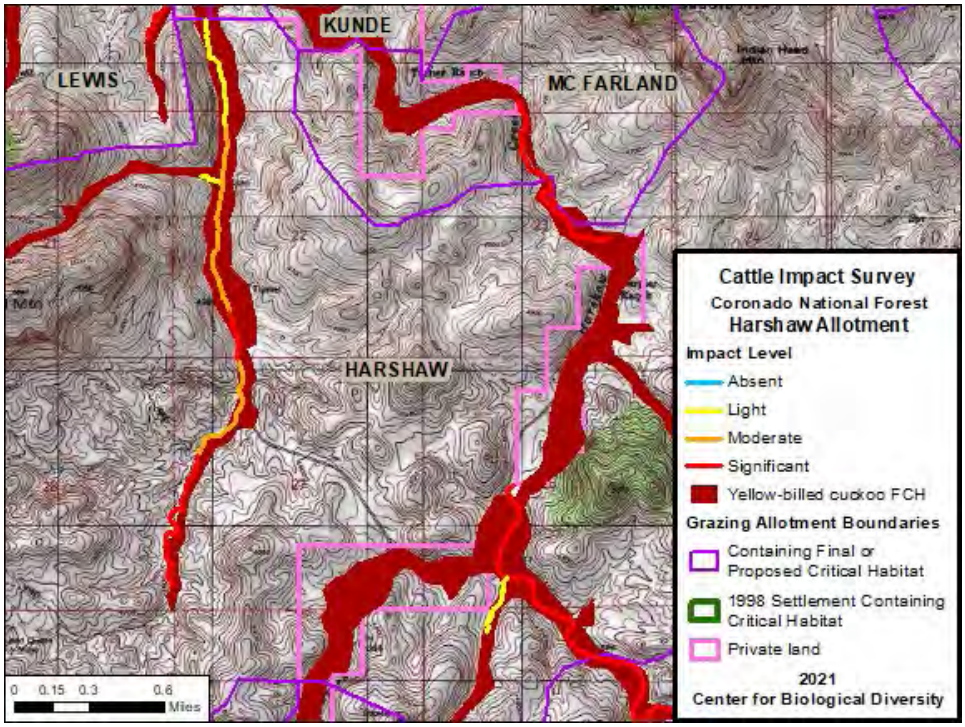


Figure A-15. Grazing impact levels in designated yellow-billed cuckoo critical habitat on the Harshaw allotment, Sierra Vista Ranger District, Coronado National Forest.

The Harshaw Allotment in Coronado National Forest, Sierra Vista Ranger District contains designated Yellow-billed Cuckoo Critical Habitat. Approximately 4.5 miles of Yellow-billed Cuckoo critical habitat was surveyed along Harshaw Creek and its tributaries within the allotment. On this allotment, Harshaw Creek is primarily ephemeral with vegetation characterized by mesquite/desert willow and cottonwood/willow gallery forests. Allotment fencing at the Harshaw/McFarland interface is down and dysfunctional where it crosses Harshaw Creek. Allotment boundary fencing at the Harshaw/Farrel interface appears intact.

Impact severity and frequency ranged from significant along the mainstem of Harshaw Creek to light/transient and moderate along its associated tributaries within Yellow-billed Cuckoo critical habitat. The main stem of Harshaw creek was significantly impacted by cattle with diminished riparian vegetation. A short area of perennial flow was found at the McFarland/Harshaw interface on Harshaw Creek; this area was especially impacted by cattle.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in a perennial segment of Harshaw creek in the Harshaw allotment, Coronado National Forest, Sierra Vista Ranger District. 31.510302, -110.681954, June 3, 2021.

Grazing impacts in Yellow-billed Cuckoo Critical Habitat in the Harshaw allotment, Coronado National Forest, Sierra Vista Ranger District. 31.488263, -110.685753, June 3, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the Harshaw allotment, Coronado National Forest, Sierra Vista Ranger District. 31.482993, -110.679874, June 3, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Harshaw allotment, Coronado National Forest, Sierra Vista Ranger District. 31.485408, -110.682406, June 3, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the Harshaw allotment, Coronado National Forest, Sierra Vista Ranger District. 31.507382, -110.67893, June 3, 2021.

Farrel Allotment

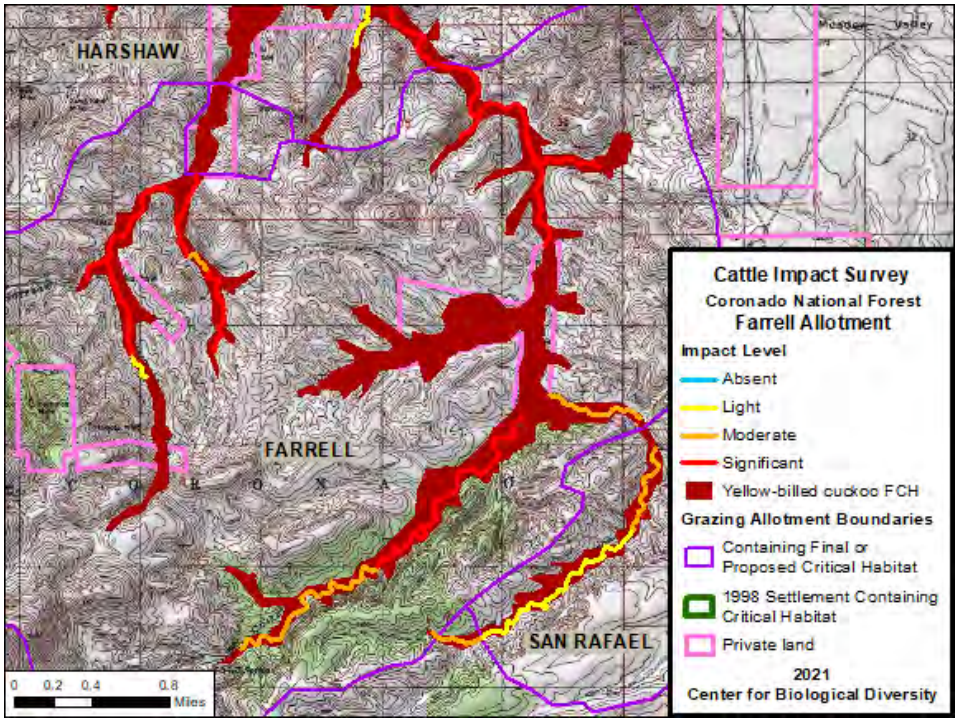


Figure A-16. Grazing impact levels in designated yellow-billed cuckoo critical habitat on the Farrell allotment, Sierra Vista Ranger District, Coronado National Forest.

Yellow-billed Cuckoo Critical Habitat continues along Harshaw creek in the Farrel allotment, Coronado National Forest, Sierra Vista Ranger District. Approximately 6.5 miles of Yellow-billed Cuckoo Critical Habitat were surveyed on the Farrel allotment along Harshaw Creek, Corral Canyon, and Hermosa Canyon. Vegetation assemblages vary widely throughout Farrel allotments designated Yellow-billed Cuckoo Critical Habitat. Mesquite/desert willow, Madrean oak woodlands, and cottonwood/willow gallery forests are the most common assemblages. Seep willow is a common constituent.

Cattle impacts were significant along the majority of stream reaches in the Farrel allotment, becoming less severe and frequent as waterways became narrower and rockier towards headwaters. A riparian exclosure labelled “Harshaw Riparian Exclosure Completed July 86” exists along Harshaw Creek near the Harshaw townsite; but fence lines are down, gates are open, and as a result cattle impacts are equal inside the fence. A herd of ~20 cattle were seen moving freely between Hermosa Canyon and Harshaw Creek, close by the historic Harshaw townsite.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Farrel Allotment, Coronado National Forest, Sierra Vista Ranger District. 31.465553, -110.706957, June 3, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the Farrel allotment, Coronado National Forest, Sierra Vista Ranger District. The Harshaw Riparian exclosure is not functional. 31.472342, -110.705215, June 3, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Farrel allotment, Coronado National Forest, Sierra Vista Ranger District. The Harshaw Riparian exclosure is not functional. 31.472342, -110.705215, June 3, 2021.

Yellow-billed Cuckoo Critical Habitat in the Farrel allotment, Coronado National Forest, Sierra Vista Ranger District. Cattle move freely between Hermosa Canyon and Harshaw Creek at the Harshaw townsite. 31.46762, -110.708123, June 3, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the Farrel allotment, Coronado National Forest, Sierra Vista Ranger District. 31.45214, -110.677288, June 3, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat with a nonfunctional fence in the Farrel allotment, Coronado National Forest, Sierra Vista Ranger District. 31.463321, -110.706278, June 3, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Farrel allotment, Coronado National Forest, Sierra Vista Ranger District. 31.478662, -110.671785, June 3, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the Farrel allotment, Coronado National Forest, Sierra Vista Ranger District. 31.481516, -110.676505, June 3, 2021.

Proctor Allotment

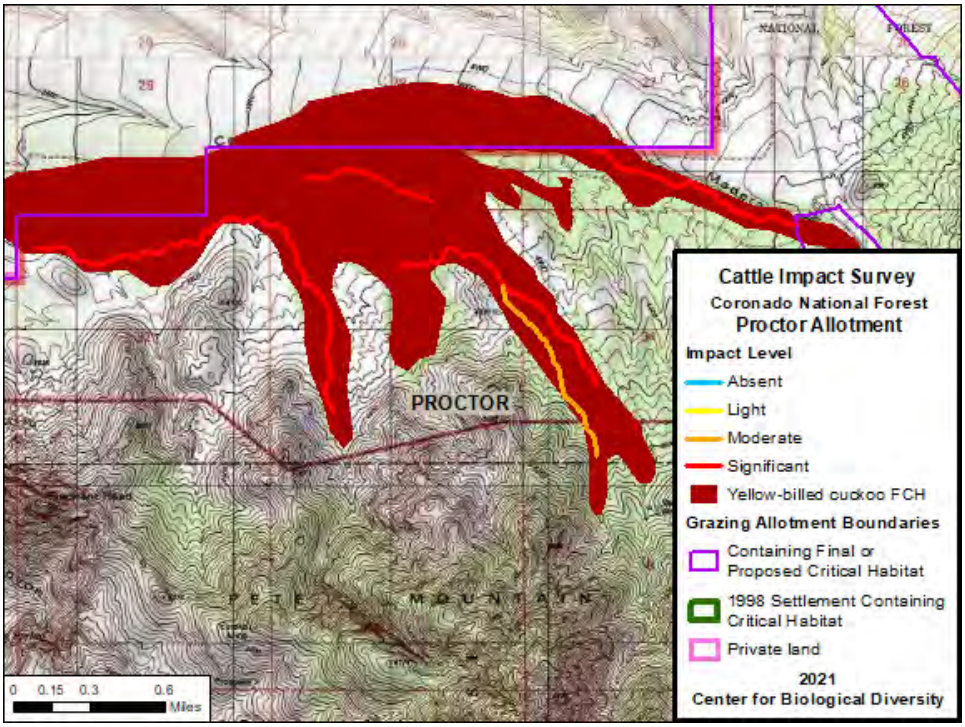


Figure A-17. Grazing impact levels in designated yellow-billed cuckoo critical habitat on the Proctor allotment, Sierra Vista Ranger District, Coronado National Forest.

Yellow-billed Cuckoo Critical Habitat in the Proctor allotment, Coronado National Forest, Nogales Ranger District was surveyed May 26, 2021. Grazing impacts were mostly significant throughout the riparian areas in this allotment. Impacts lessened to moderate as elevation increased. In many of the areas, mesquite branches are no lower than 4 feet and little more than exposed soil, cow feces, and the occasional shrubs remain. Numerous cattle trails weaving in and out of riparian areas created bank erosion and instability. The stench of cow feces and bellowing cattle in the distance permeated the air.

Grazed Yellow-billed Cuckoo Critical Habitat in the Proctor allotment, Coronado National Forest, Nogales Ranger District. 31.741565, -110.927616 (1), and 31.739535, -110.936912 (2), May 26, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the Proctor allotment, Coronado National Forest, Nogales Ranger District. 31.742917, -110.916581 (1), 31.737182 110.914097 (2), May 26, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the Proctor allotment, Coronado National Forest, Nogales Ranger District. 31.742604, -110.896727, May 26, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Proctor allotment, Coronado National Forest, Nogales Ranger District. 31.740999, -110.891847 (1), 31.741719, -110.893511 (2), May 26, 2021.

McBeth Allotment

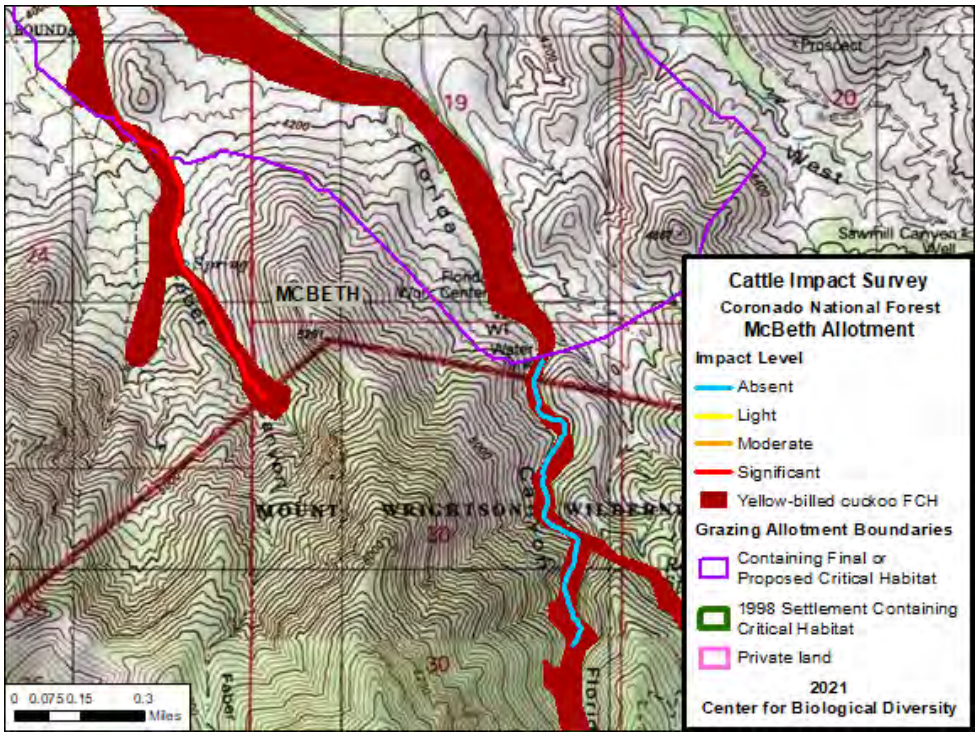


Figure A-18. Grazing impact levels in designated yellow-billed cuckoo critical habitat on the McBeth allotment, Sierra Vista Ranger District, Coronado National Forest.

Yellow-billed Cuckoo Critical Habitat in the McBeth allotment was surveyed for cattle impacts on May 26, 2021. Cattle sign, both old and new, were present in this allotment. Florida Canyon was fenced off from the Santa Rita Experimental Range and did not contain cattle sign. Other than Florida Canyon, riparian and surrounding mesquite bosques were significantly impacted. In areas with significant grazing intensity, soil compaction, barren soil scattered with feces and reduction of plant biomass and diversity was observed, diminishing the value of this habitat for breeding Yellow-billed Cuckoo.

Grazed Yellow-billed Cuckoo Critical Habitat in the McBeth allotment, Coronado National Forest, Nogales Ranger District. 31.773474, -110.872243 (1), 31.765753, -110.858750 (2), May 26, 2021.

Yellow-billed Cuckoo Critical Habitat in the McBeth allotment, Coronado National Forest, Nogales Ranger District. 31.762499, -110.858950 (1), 31.767265, -110.860997 (2), May 26, 2021.

Hayfield Allotment

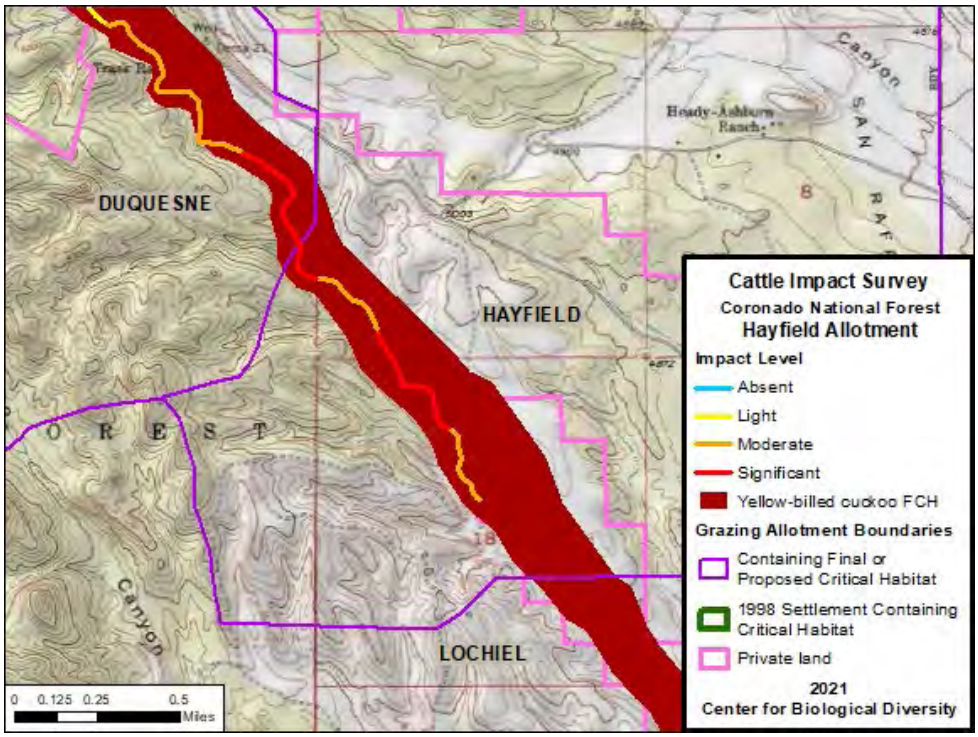


Figure A-19. Grazing impact levels in designated yellow-billed cuckoo critical habitat on the Hayfield allotment, Sierra Vista Ranger District, Coronado National Forest.

The Hayfield allotment on Coronado National Forest, Sierra Vista Ranger District, contains designated Yellow-billed Cuckoo critical habitat. Approximately 1 mile of Yellow-billed Cuckoo critical habitat was surveyed on the Hayfield allotment along Duquesne Wash. Cattle trails meander through the survey area. Impacts were older and no recent cattle use was observed. However, cattle impacts still ranged from significant to light/transient.

Fence lines in the Hayfield allotment appear relatively new and in good, sturdy condition. It is possible that these fences are new and postdate the cattle impacts beyond them. The fence line at the Duquesne allotment interface also appears functional.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Hayfield allotment, Coronado National Forest, Sierra Vista Ranger District. 31.351924, -110.658522, June 4, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Hayfield allotment, Coronado National Forest, Sierra Vista Ranger District. 31.355974, -110.661269, June 4, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Hayfield allotment, Coronado National Forest, Sierra Vista Ranger District. 31.352474, -110.659037, June 4, 2021.

Grazed yellow-billed Cuckoo Critical Habitat in the Hayfield allotment, Coronado National Forest, Sierra Vista Ranger District. 31.355662, -110.661269, June 4, 2021.

Duquesne Allotment

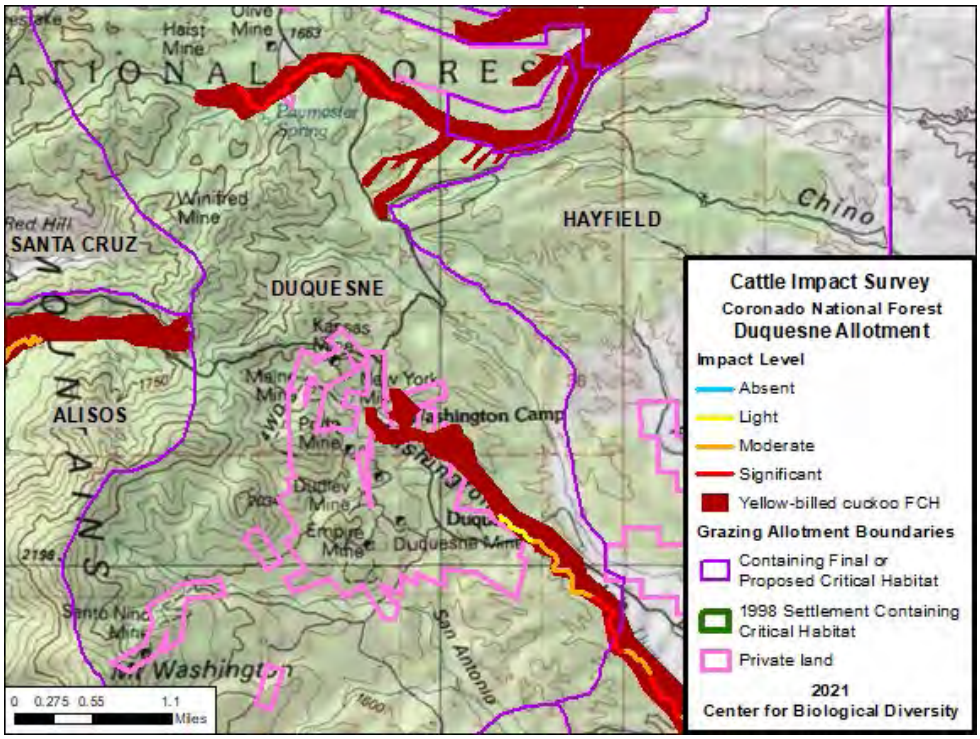


Figure A-20. Grazing impact levels in designated yellow-billed cuckoo critical habitat on the Duquesne allotment, Sierra Vista Ranger District, Coronado National Forest.

The Duquesne allotment on Coronado National Forest, Sierra Vista Ranger District, contains designated Yellow-billed Cuckoo Critical Habitat. Through the 1930's the Duquesne allotment was considered one of the most overgrazed allotments in the San Rafael valley vicinity.[416] Here soil, range, and riparian conditions have contributed to channel degradation, sediment loading, and impairment of riparian and aquatic ecosystems.[417]

Approximately 3 miles of Yellow-billed Cuckoo Critical Habitat were surveyed on the Duquesne allotment in the headwaters of Mowry Wash and along Duquesne Wash. Impact severity was variable throughout surveys, from moderate to significant. Where Duquesne Wash leaves Washington Gulch impact severity increases; this coincides with a widening of the stream corridor. Impacts were primarily older though some were recent. Fence lines in the area appear relatively new and in good, sturdy condition. The fence line at the Hayfield allotment interface is functional.

[416] Hadley, D. and Sheridan, T.E., 1995. Land use history of the San Rafael Valley, Arizona (1540-1960) (Vol. 269). Rocky Mountain Forest and Range Experiment Station.

[417] Stefferud & Stefferud 2004, p. 229.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Duquesne allotment, Coronado National Forest, Sierra Vista Ranger District. 31.358492, -110.664038, June 4, 2021.

Grazed yellow-billed Cuckoo riparian Critical Habitat in the Duquesne allotment, Coronado National Forest, Sierra Vista Ranger District. 31.358492, -110.664038, June 4, 2021.

Grazed yellow-billed Cuckoo Critical Habitat in the Duquesne allotment, Coronado National Forest, Sierra Vista Ranger District. 31.416992, -110.699808, June 4, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Duquesne allotment, Coronado National Forest, Sierra Vista Ranger District. 31.414051, -110.690902, June 4, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the Duquesne allotment, Coronado National Forest, Sierra Vista Ranger District. 31.41649, -110.701362, June 4, 2021.

Agua Caliente Allotment

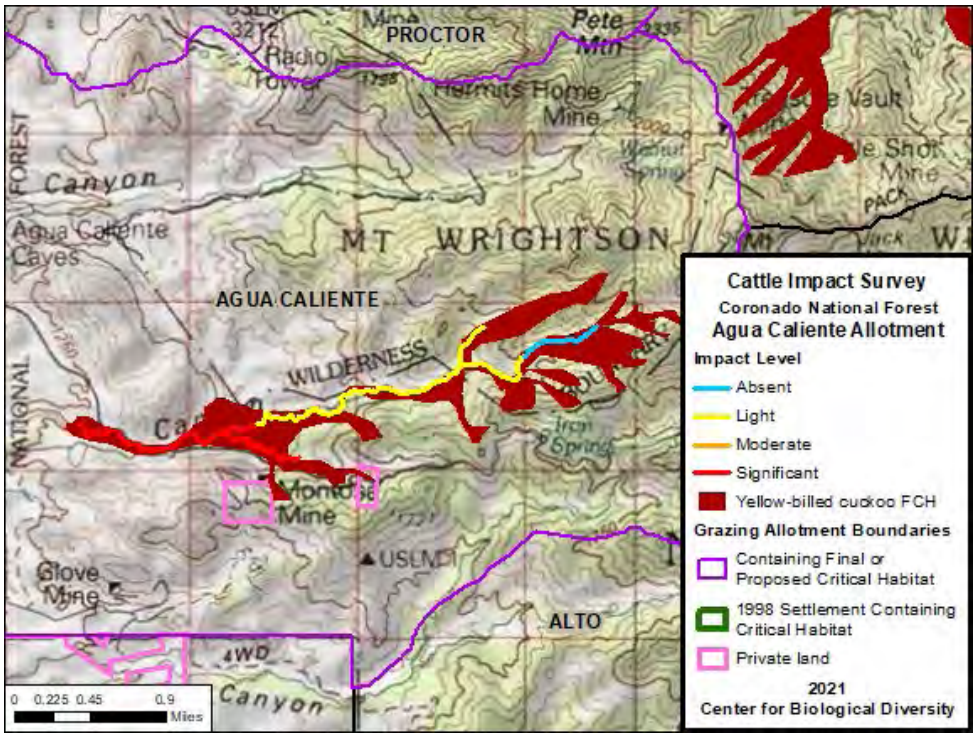


Figure A-21. Grazing impact levels in designated yellow-billed cuckoo critical habitat on the Agua Caliente allotment, Sierra Vista Ranger District, Coronado National Forest.

Yellow-billed Cuckoo Critical Habitat in the Agua Caliente allotment, Coronado National Forest, Nogales Ranger District, was surveyed on May 27, 2021. Significant cattle impacts in this allotment were observed throughout cuckoo critical habitat, especially in the lower elevation riparian zones. In many of these areas, we observed significant removal of grasses and forbs that left areas of barren soil. Mesquite bosques were littered with feces and understory vegetation was significantly diminished by grazing. The creek bed here was very rocky with large boulders, which appeared to influence cattle to spend most of their time on flats and surrounding mesquite bosques.

Moving further east upstream into designated Critical Habitat, steep mountainous terrain, boulder-filled creek beds and plateaus discouraged cattle use. Vegetation communities and ground cover were more intact in these zones in comparison to the areas in which cattle were primarily stationed.

Grazed Yellow-billed Cuckoo Critical Habitat in the Agua Caliente allotment, Coronado National Forest, Nogales Ranger District. 31.672270, -110.947128, May 27, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the Agua Caliente allotment, Coronado National Forest, Nogales Ranger District. 31.674669, -110.934165, May 27, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the Agua Caliente allotment, Coronado National Forest, Nogales Ranger District. 31.673783, -110.949229 (1), 31.674697, -110.936420 (2), May 27, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the Agua Caliente allotment, Coronado National Forest, Nogales Ranger District. 31.673285, -110.938985, May 27, 2021.

Ungrazed Yellow-billed Cuckoo Critical Habitat in the Agua Caliente allotment, Coronado National Forest, Nogales Ranger District. 31.674664, -110.928888 (1), 31.678036, -110.913153 (2), May 27, 2021.

Post Canyon Allotment

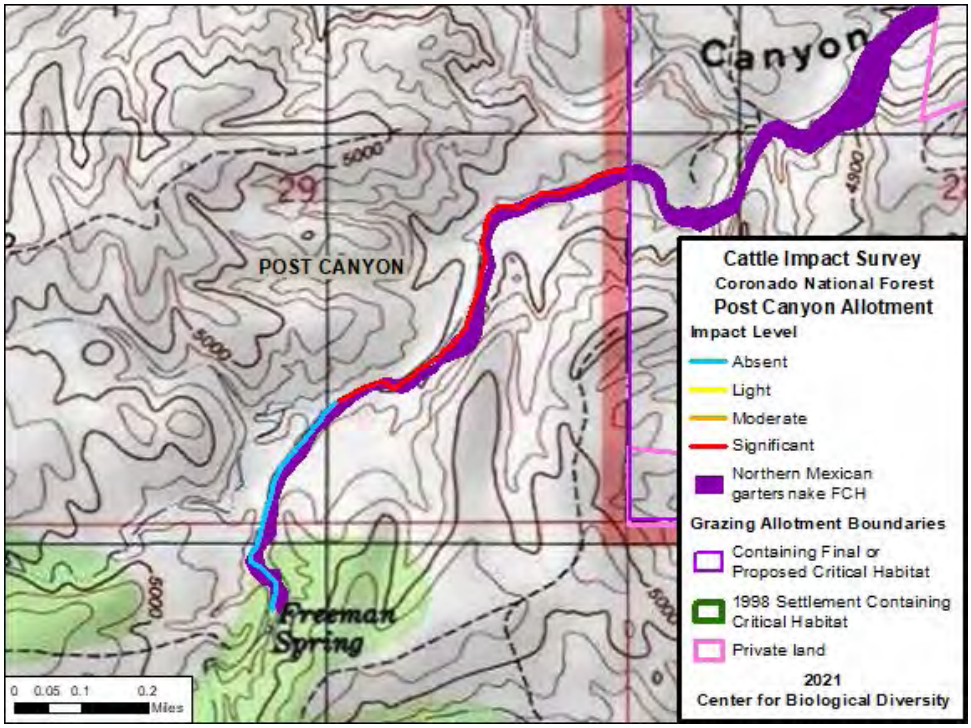


Figure A-22. Grazing impact levels in designated northern Mexican garter snake critical habitat on the Post Canyon allotment, Sierra Vista Ranger District, Coronado National Forest.

The Post Canyon allotment in Coronado National Forest, Sierra Vista Ranger District contains Northern Mexican Gartersnake Critical Habitat. Approximately 1 mile of NMGS Critical Habitat was surveyed along an ephemeral wash containing Freeman Spring, which flows into Post Canyon. Intact, functional fence lines have (inferably) successfully kept cattle out of the stream channel from Freeman Spring to 0.3 miles downstream; cattle impacts along this transect were absent.

However, the lower 0.7 miles showed significant cattle impacts. Cattle trails meander through the entire segment along the wash and in the adjacent uplands. Wallows and soil disturbances were pervasive in frequency. Bunchgrasses and upland grasses were significantly removed. The fence line at the allotment boundary appeared intact.

Grazed Northern Mexican Gartersnake Critical Habitat in the Post Canyon allotment, Coronado National Forest, Sierra Vista Ranger District. 31.57883, -110.53044, June 2, 2021.

Grazed Northern Mexican Gartersnake riparian Critical Habitat in the Post Canyon allotment, Coronado National Forest, Sierra Vista Ranger District. 31.57584, -110.532757, June 2, 2021.

Grazed Northern Mexican Gartersnake Critical Habitat in the Post Canyon allotment, Coronado National Forest, Sierra Vista Ranger District. 31.57883, -110.53044, June 2, 2021.

San Rafael Allotment

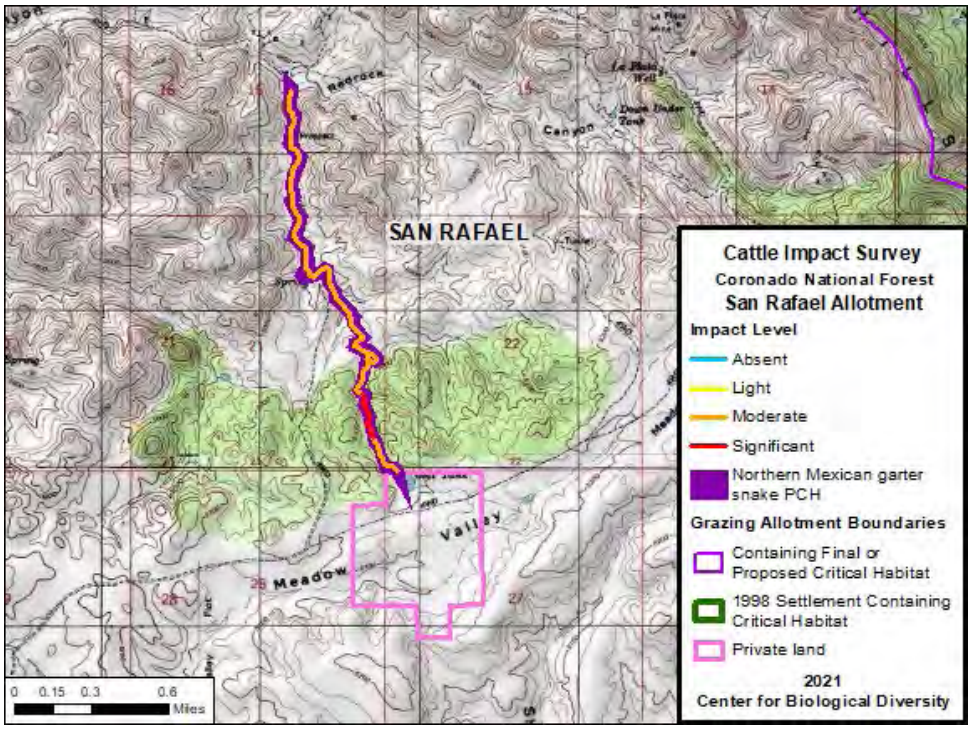


Figure A-23. Grazing impact levels in designated northern Mexican garter snake critical habitat on the San Rafael allotment, Sierra Vista Ranger District, Coronado National Forest.

The San Rafael Allotment in Coronado National Forest, Sierra Vista Ranger District contains Northern Mexican Gartersnake Critical Habitat. Approximately 1.7 miles of NMGS critical habitat were surveyed on the San Rafael allotment within the Cott Tank Riparian Exclosure and ~ 0.2 miles were surveyed between the upstream exclosure fence line and Cott Tank. Upland vegetation along this stretch is characterized by Madrean oak woodlands and mesquite. Cottonwoods and ashes occur at sporadic intervals along the stream channel. Increased vegetative productivity can be found at intermittent pools of surface water along the stream channel.

Impacts throughout the survey segment were predominately moderate. Cattle impacts were detected throughout the entire exclosure. Upland terraces frequently held evidence of moderate grazing and light ground compaction. Bunchgrasses were the most common graminoids within the stream channel and were moderately grazed, albeit less frequently. Trails meandered through the entire survey area, generally running parallel with, and crossing, the wash. Towards the downstream end of the exclosure, perennial water occurs at brief intervals. Grazing impacts increase in severity at these locations. Upland fence lines appear intact surrounding the exclosure, however fence lines crossing the wash are dysfunctional on both ends.

The Cott Tank cattle exclosure contains designated NMGS Critical Habitat on the San Rafael Allotment, but was originally established to protect another endangered fish, the Gila topminnow (*Poeciliopsis occidentalis occidentalis*). While the Coronado has proposed converting this exclosure into a riparian pasture,[418] the 2021 Biological Opinion states that "take of northern Mexican gartersnakes will be considered exceeded if take is

[418] September 27, 2019, Biological Assessment for Coronado National Forest Livestock Grazing Program, p. 16.

exceeded for the Gila topminnow, Chiricahua leopard frog, or Sonoran tiger salamander within the Huachuca EMA as provided for above."[419] The following excerpt is from the Incidental Take Statement provided for Gila topminnow in the September 30, 2021, Biological Opinion for Continuation of Livestock Grazing on the Coronado National Forest:

> "2. For the general on-going livestock grazing and its management, take will be considered to have been exceeded if exclosure fencing inspections and repairs are not conducted and implemented within two weeks of observation as specified in Conservation Measure 19."[420]

Based on this Take definition and the images provided below for the San Rafael allotment, these measures have not been followed and take of northern Mexican gartersnakes and Gila topminnow has occurred. Reinitiation of consultation must therefore take place.[421]

Little Outfit Tank was also surveyed and showed significant grazing and ground disturbances with moderate streambank impacts. Little Outfit Tank was completely dry and has no exclusion fencing.

Grazed Northern Mexican Gartersnake Critical Habitat in the San Rafael allotment, Coronado National Forest, Sierra Vista Ranger District. A USFS sign marking the Cott Tank Exclosure reads: "*This area was fenced in 1992 to protect sensitive plants & wildlife and improve riparian conditions in Redrock Canyon*." A cow pie sits in front of this sign, within the exclosure. 31.520791, -110.618805, June 2, 2021.

[419] September 30, 2021, Biological Opinion on Ongoing Grazing on the Coronado National Forest, p. 142.

[420] September 30, 2021, Biological Opinion on Ongoing Grazing on the Coronado National Forest, p. 62.

[421] 16 U.S.C. § 1532, 50 CFR § 17.21, 16 U.S.C. § 1536(b)(4).

A dysfunctional exclosure fence in Northern Mexican Gartersnake Critical Habitat in the San Rafael allotment, Coronado National Forest, Sierra Vista Ranger District. 31.501157, -110.613318, June 2, 2021.

Grazed Northern Mexican Gartersnake riparian Critical Habitat within an exclosure in the San Rafael allotment, Coronado National Forest, Sierra Vista Ranger District. 31.516277, -110.618564, June 2, 2021.

Grazed Northern Mexican Gartersnake Critical Habitat in the San Rafael allotment, Coronado National Forest, Sierra Vista Ranger District. 31.510437, -110.617239, June 2, 2021.

Grazed Northern Mexican Gartersnake Critical Habitat in the San Rafael allotment, Coronado National Forest, Sierra Vista Ranger District. 31.512641, -110.618547, June 2, 2021.

Grazed Northern Mexican Gartersnake Critical Habitat in the San Rafael allotment, Coronado National Forest, Sierra Vista Ranger District. 31.516991, -110.618451, June 2, 2021.

Riparian grazing in Northern Mexican Gartersnake Critical Habitat in the San Rafael allotment, Coronado National Forest, Sierra Vista Ranger District. Feces has contaminated remaining water in a natural seep. 31.517983, -110.618868, June 2, 2021.

Grazed Northern Mexican Gartersnake Critical Habitat in the San Rafael allotment, Coronado National Forest, Sierra Vista Ranger District. 31.510236, -110.616444, June 2, 2021.

Grazed Northern Mexican Gartersnake Critical Habitat pond in the San Rafael allotment, Coronado National Forest, Sierra Vista Ranger District. 31.479971, -110.569226, June 2, 2021.

Lyle Canyon Allotment

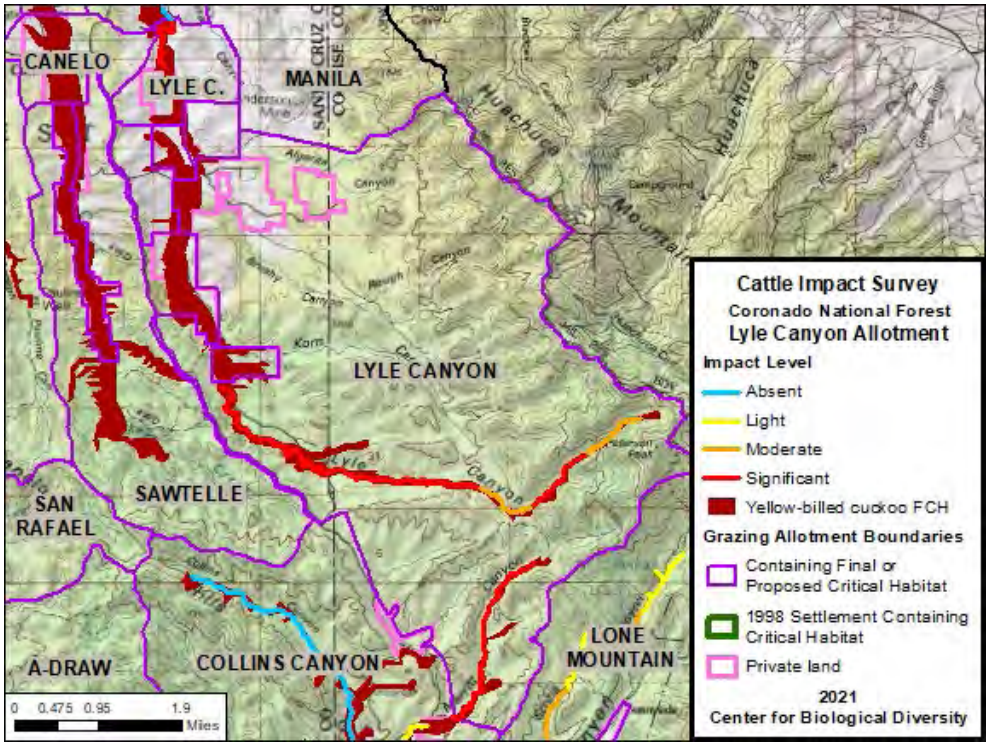


Figure A-24. Grazing impact levels in designated yellow-billed cuckoo critical habitat on the Lyle Canyon allotment, Sierra Vista Ranger District, Coronado National Forest.

Yellow-billed Cuckoo Critical Habitat in the Lyle Canyon allotment, Coronado National Forest Sierra Vista Ranger District, was surveyed on May 29, 2021. Cattle sign was prevalent throughout the allotment. Many grazed areas in Lyle Canyon were characterized by removal of grasses and understory vegetation to the point that bare, dusty ground remained. Numerous examples of barren soil and ruts were observed throughout the allotment. Stream banks, streambed and benches were significantly impacted. Examples of streambank erosion were common.

Heading east upstream in Lyle Canyon, the upper reaches of cuckoo habitat appeared less impacted. Only older sign of cattle presence was noted but the impacts still remained. Steep hillsides and large boulders throughout the core riparian area naturally discourage cattle and force concentrated activity on stream benches and uplands. Cattle were present in many parts of the allotment, despite it being the growing season and breeding season for Yellow-billed Cuckoo.

A section of Merritt Canyon that runs through the Lyle Canyon allotment was also littered with cattle impacts. Feces in the creek bed and surrounding benches were abundant. Many well-used trails weaved through the riparian and examples of streamside erosion were common. Ruts and wallows were frequently observed throughout the area. Such impacts have diminished the value of this habitat for breeding and foraging cuckoos.

Grazed Yellow-billed Cuckoo Critical Habitat in the Lyle Canyon allotment, Coronado National Forest, Sierra Vista Ranger District. 31.548134, -110.490795, May 29, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the Lyle Canyon allotment, Coronado National Forest, Sierra Vista Ranger District. 31.485889, -110.479887, May 29, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Lyle Canyon allotment, Coronado National Forest, Sierra Vista Ranger District. 31.472723, -110.453099 (1), 31.470223, -110.418461 (2), May 29, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in Merritt Canyon within the Lyle Canyon allotment, Coronado National Forest, Sierra Vista Ranger District. Location: 31.437807, -110.431449, May 29, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in Merritt Canyon within the Lyle Canyon allotment, Coronado National Forest, Sierra Vista Ranger District. 31.450170, -110.430351, May 29, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in Merritt Canyon within the Lyle Canyon allotment, Coronado National Forest, Sierra Vista Ranger District. 31.457283, -110.424087, May 29, 2021.

Lone Mountain Allotment

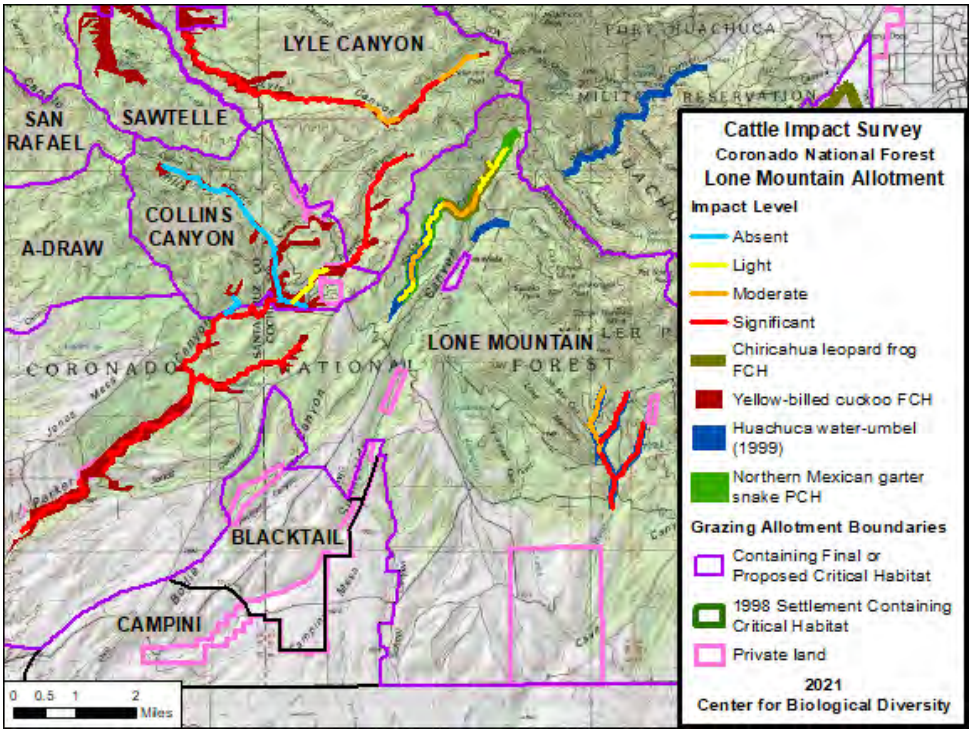


Figure A-25. Grazing impact levels in multiple critical habitat designations on the Lone Mountain allotment, Sierra Vista Ranger District, Coronado National Forest.

The Lone Mountain allotment, Sierra Vista Ranger District, contains critical habitat for Yellow-billed Cuckoo and Huachuca Water Umbel. Yellow-billed Cuckoo critical habitat in the Lone Mountain allotment was surveyed on May 29, 2021. Critical habitat extends through Parker Canyon and some of its tributaries. The canyon has perennial flow with several small ponds present throughout the designation. This stream has a dysfunctional riparian exclusion fence (the Parker Exclosure) with multiple downed sections. Cattle impacts are found within the exclosure, and more significant cattle impacts occur downstream of the fencing.

Cows were present throughout the designated Yellow-billed Cuckoo Critical Habitat. Significant removal of streamside vegetation was observed here, along with large patches of barren soil patches. A dead cow was decomposing in the stream during the survey. In a designated critical habitat tributary to Parker Canyon, several cows were congregated around a natural spring and impacts were present throughout the entirety of the designated habitat. Vegetation on all benches surrounding Parker Canyon were significantly impacted by cattle. Cow feces and barren soil remained.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Parker Exclosure, Lone Mountain allotment, Coronado National Forest, Sierra Vista Ranger District. 31.424457 N 110.458634, May 29, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Lone Mountain allotment, Coronado National Forest, Sierra Vista Ranger District. 31.419457, -110.473824, May 29, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Lone Mountain allotment, Coronado National Forest, Sierra Vista Ranger District. 31.417759, -110.473811, May 29, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Lone Mountain allotment, Coronado National Forest, Sierra Vista Ranger District. Cows are present and grazing at the onset of Yellow-billed Cuckoo nesting season. 31.415490, -110.475226, May 29, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Lone Mountain allotment, Coronado National Forest, Sierra Vista Ranger District. 31.410700, -110.480264, May 29, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the Lone Mountain allotment, Coronado National Forest, Sierra Vista Ranger District. 31.379960, -110.5122741, May 29, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the Lone Mountain allotment, Coronado National Forest, Sierra Vista Ranger District. 31.392109, -110.496475, May 29, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the Lone Mountain allotment, Coronado National Forest, Sierra Vista Ranger District. 31.395339, -110.491481, May 29, 2021.

Grazed Yellow-billed Cuckoo riparian Critical Habitat in the Lone Mountain allotment, Coronado National Forest, Sierra Vista Ranger District. 31.405674, -110.468933, May 29, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the Lone Mountain allotment, Coronado National Forest, Sierra Vista Ranger District. 31.409708, -110.454970, May 29, 2021.

Grazed Yellow-billed Cuckoo Critical Habitat in the Lone Mountain allotment, Coronado National Forest, Sierra Vista Ranger District. 31.409381, -110.481504, May 29, 2021.

A decomposing cow carcass in a Yellow-billed Cuckoo Critical Habitat stream in the Lone Mountain allotment, Coronado National Forest, Sierra Vista Ranger District. 31.417318, -110.474381, May 29, 2021.

HWU Critical Habitat on the Lone Mountain Allotment was surveyed beginning in September 2021. This critical habitat designation includes two cattle exclosures, the Lone Mountain exclosure and the Bear Creek exclosure to the east. Both exclosures were accessible to cattle via nonfunctional fences across creek beds, and cattle sign was observed in both locations.

A nonfunctional fence line in Huachuca Water Umbel Critical Habitat on the Lone Mountain allotment, Coronado National Forest, Sierra Vista Ranger District. 31.384352, -110.364638, September 24, 2021.

A nonfunctional fence line in Huachuca Water Umbel Critical Habitat on the Lone Mountain allotment, Coronado National Forest, Sierra Vista Ranger District. 31.382621, -110.363308, September 24, 2021.

Cattle sign within the Lone Mountain Huachuca Water Umbel exclosure, Coronado National Forest, Sierra Vista Ranger District. 31.38193, -110.36279 (1) and 31.383506, -110.363987 (2), October 24, 2021.

Cattle sign within the Lone Mountain Huachuca Water Umbel exclosure boundary, Coronado National Forest, Sierra Vista Ranger District. 31.38491, -110.36509, October 24, 2021.

Gap in the southern boundary of the Bear creek Huachuca Water Umbel exclosure, Lone Mountain Allotment, Coronado National Forest, Sierra Vista Ranger District. 31.384461, -110.357743, October 1, 2021.

The gate to the Bear creek Huachuca Water Umbel exclosure was open upon arrival. Lone Mountain Allotment, Coronado National Forest, Sierra Vista Ranger District. 31.384525, -110.360553, October 1, 2021.

Cattle sign within the Bear Creek Huachuca water umbel exclosure in the Lone Mountain Allotment, Coronado National Forest, Sierra Vista Ranger District. 31.385887, -110.359266 (1), and 31.389764, -110.356262 (2), September 24, 2021.

Grazed Critical Habitat on the Lone Mountain Allotment, Coronado National Forest, Sierra Vista Ranger District. 31.38054, -110.36323, October 24, 2021.

Bank disturbances in Huachuca Water Umbel Critical Habitat on the Lone Mountain Allotment, Coronado National Forest, Sierra Vista Ranger District. 31.38479, -110.36501, October 24, 2021.

Grazed Huachuca Water Umbel Critical Habitat on the Lone Mountain allotment, Coronado National Forest, Sierra Vista Ranger District. 31.38193, -110.36279 (1), 31.38048, -110.36308 (2), October 24, 2021.

Grazing sign in Huachuca Water Umbel Critical Habitat on the Lone Mountain allotment, Coronado National Forest, Sierra Vista Ranger District. 31.38048, -110.36308, October 24, 2021.


Grazing in Huachuca Water Umbel Critical Habitat on the Lone Mountain allotment, Coronado National Forest, Sierra Vista Ranger District. 31.38471, -110.36478 (1), 31.38475, -110.36489 (2), October 24, 2021.

For Huachuca Water Umbel, the 2021 Coronado Biological Opinion states:

> "The Forest will implement the following, species-specific conservation measures with the intent to avoid and minimize adverse effects to each species resulting from the proposed action:
>
> 10. Maintain existing exclosures designed to reduce livestock pressure on Huachuca water umbel habitat. While permitted livestock are grazing pastures bordering an exclosure, the Forest will ensure:
>
> a) Exclosure fences are functional upon livestock entry to these pastures; and
>
> b) The Forest and/or the permit holder will check and repair these fences to ensure that no fence is non-functional for more than two weeks.
>
> 11. Limit livestock access to Huachuca water umbel habitat in Sycamore Spring. Access could be managed by the construction of a temporary barrier, such as electric fence, while livestock are in the pasture, or by a permanent barrier.

> 12. The Forest will determine, with the USFWS, whether there is a need to construct additional exclosures and/or riparian pastures to limit livestock access to Huachuca water umbel habitat.
>
> 13. Work with USFWS to expand populations of Huachuca water umbel in other areas. Possible areas could include Oak Spring and Neighbor Spring on the Lone Mountain allotment.
>
> 14. The Forest will coordinate with the USFWS to develop and implement a program to monitor Huachuca water umbel populations. This program will be developed within two years of the issuance date of the final Biological Opinion."[422]

We have documented in this Notice nonfunctional HWU exclosures on the Lone Mountain Allotment with cattle impacts. Furthermore, in the vicinity of the Lone Mountain HWU exclosures, grazing is only supposed to occur in winter months. According to the 2018 5-year review for HWU, and the 2002 Biological Opinion cited therein,

> "In Sunnyside Canyon, Lone Mountain Canyon and its tributaries, Bear Canyon, and Scotia Canyon, the current Coronado National Forest Grazing Management Plan recommends grazing in winter months only when adequate water is available to disperse cattle and reduce impact on riparian areas (Service 2002b, pp. 144-146)."[423]

We have provided documentation in this Notice (with photos prior to the release of the updated 2021 BO) that this was not the case, and cattle were present even while the permittee was under partial suspension for non-compliance.

The failure of these HWU exclosures is nothing new. According to a 2004 report.

> "Fencing constructed for the Bear Creek riparian restoration project could allow riparian recovery to occur, however, at the time of our survey, fences were down and cattle were heavily impacting the riparian area, which supported the fact that exclosure fences typically do not provide long-term protection for riparian resources without constant monitoring and maintenance.[424]
>
> The Bear Creek riparian restoration project, implemented to protect critical habitat of the endangered Huachuca water umbel, consisted of exclosure fencing around 7 acres of riparian habitat near the confluence with Bear Creek (USFWS 1999a). At the time of our survey, the fences were torn down and there was extensive cattle grazing all along the wetted area of Lone Mountain Canyon."[425]

[422] The September 2021 Biological Opinion for Continued Grazing on Coronado National Forest, pages 13-14.

[423] The August 21, 2014 5-year review for HWU, p. 40.

[424] Jerome A. Stefferud Sally E. Stefferud 2004. Aquatic and Riparian Surveys of Selected Stream Courses on Sierra Vista and Nogales Ranger Districts, Coronado National Forest, Cochise and Santa Cruz Counties, Arizona.

[425] Stefferud & Stefferud 2004, p. 335.

Deer Creek Allotment

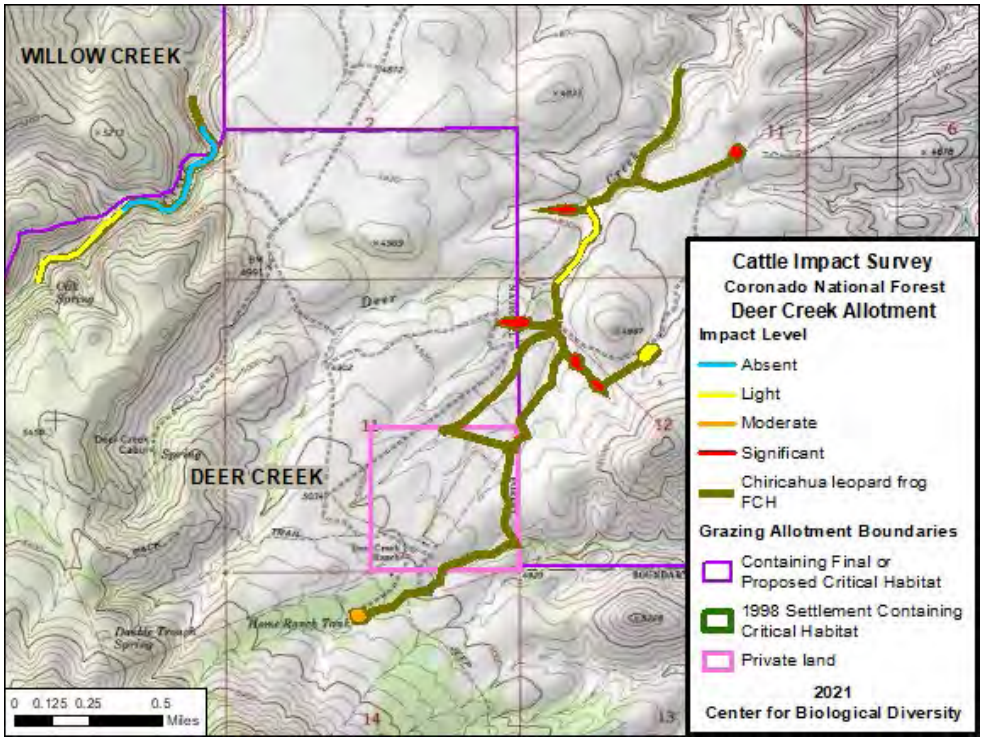


Figure A-26. Grazing impact levels in designated Chiricahua leopard frog critical habitat on the Deer Creek allotment, Safford Ranger District, Coronado National Forest.

Chiricahua Leopard Frog Critical Habitat on the Deer Creek allotment consists of a mostly ephemeral portion of Oak Creek, a stock pond named Home Ranch Tank, another unnamed pond which exists on the USFS/State Trust Land boundary, and several short stretches of intermittent, dry desert wash dispersal corridors. This area located in the eastern Galiuro Mountains in the Aravaipa Creek watershed. Cow-blasted mesquite/ juniper-savanna characterizes the uplands, and Madrean oak woodlands along with facultative- riparian species such as *Platinus wrightii, Juglans major,* and *Celtis reticulata* characterize the waterways. *Salix spp.* and *Populus fremontii* occur intermittently. The upstream segment of Oak Creek contained about 30 feet of surface water nearby Oak Spring and several small pools in tinajas. This allotment was surveyed Sept. 4, 2020.

Cattle impacts were generally old and transient but were found throughout the survey. The overall terrain is not the best terrain for cattle. Moving downstream in Deer Creek, the waterway becomes more canyon like and seems to naturally exclude cattle. Home Ranch Tank lies in the upper Deer Creek watershed near a private inholding owned by the Deer Creek Ranch. This pond is created by a concrete dam. Native ungulates sign is evident and Chiricahua leopard frogs are present. No recent cattle impacts were observed, however old impacts are abundant all around the pond. There is no cattle exclosure within the pond; excluding cows could only be accomplished by employing the barbwire fencing surrounding the entire pond. However, these gates had been left open.

Hundreds of Chiricahua leopard frogs were observed in Home Ranch Tank, and none were observed elsewhere on the allotment. Home Ranch Tank has been augmented in 2013, 2015 and 2016.[426]

Chiricahua Leopard Frogs in Home Ranch Tank, a Critical Habitat pond in the Deer Creek allotment, Coronado National Forest Safford Ranger District. 32.65694, -110.27447, September 4, 2020.

[426] Public Records response, from Arizona Game and Fish Department, to Center for Biological Diversity, November 19, 2020, Public Records request, responsive to request for (1) releases and translocations, and (2) survey results; January 6, 2021.

Grazed Chiricahua Leopard Frog Critical Habitat breeding pond in the Deer Creek allotment, Coronado National Forest, Safford Ranger District. 32.67139, -110.26508, September 4, 2020.

Grazed Chiricahua Leopard Frog Critical Habitat stream at Oak creek near Oak Spring in the Deer Creek allotment, Coronado National Forest, Safford Ranger District. 32.67397, -110.29299, September 4, 2020.

Oak Creek was augmented in 2008, 2013, and 2014. No CLF were observed in 2017, and no surveys were done in 2018, 2019, and 2020.[427]

The above images show that aquatic breeding habitats are not being effectively protected, created and restored, habitat for dispersal is not being protected and managed, and threats and causes of decline are not being reduced or eliminated. Fencing of these critical habitat features would have been prudent, as the images show shoreline vegetation trying to grow despite having already endured a record-breaking year for both heat and drought.[428] Instead, critical habitat is impaired and diminished through authorized action. According to the new 2021 Biological Opinion ITS statement for CLF, this unfortunate circumstance is completely permissible. An entire CLF population and its breeding habitat could be affected or even wiped out for a year in any (or all) EMA(s), without even triggering take. This ITS therefore is arbitrary and capricious and violates the Administrative Procedure Act.[429]

CONCLUSION

Prior to our initiating our recent successful legal challenges against the Apache-Sitgreaves,[430] Coconino,[431] Gila,[432] Prescott[433] and Tonto[434] National Forests, we were appalled and disgusted by our observations and documentation of widespread adverse modification of designated riparian Critical Habitat on these Forests.

Now once again, on the Coronado National Forest, we find that the same Region 3 Forest Service culture and practice have also resulted in adverse modification of designated riparian Critical Habitat.

But on the Coronado National Forest, the situation even is worse than on the other Region 3 Forests. The situation on the Coronado National Forest is worse because instead of Critical Habitat cow exclosures, riparian Critical Habitat is being managed by a scheme based on the use of cow grazing utilization metrics that do not protect riparian dependent endangered species.

---

[427] Public Records response, from Arizona Game and Fish Department, to Center for Biological Diversity, November 19, 2020, Public Records request, responsive to request for (1) releases and translocations, and (2) survey results; January 6, 2021.

[428] https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?West

[429] 5 USC §706(2)(A).

[430] Sixty-Day Notice of Endangered Species Act Violations, Apache-Sitgreaves National Forest, CBD, June 27, 2019, http://forestpolicypub.com/wp-content/uploads/2019/07/000007_Center-for-Bio-Div-re-ESA-re-Jumping-Mouse_Region-3.pdf.; Sixty-day Notice of Endangered Species Act Violations, Upper Gila River Watershed, CBD, July 17, 2019, https://www.biologicaldiversity.org/programs/public_lands/grazing/pdfs/Upper-Gila-USFS-grazing-allotments-NOI-2019_07_17.pdf.

[431] Sixty-Day Notice of Endangered Species Act Violations, Verde River Drainage, CBD, March 16, 2020, https://www.biologicaldiversity.org/programs/public_lands/rivers/pdfs/NOI-20200316-Verde-River.pdf.;

[432] Sixty-day Notice of Endangered Species Act Violations, Upper Gila River Watershed, CBD, July 17, 2019, https://www.biologicaldiversity.org/programs/public_lands/grazing/pdfs/Upper-Gila-USFS-grazing-allotments-NOI-2019_07_17.pdf.

[433] Sixty-Day Notice of Endangered Species Act Violations, Verde River Drainage, CBD, March 16, 2020, https://www.biologicaldiversity.org/programs/public_lands/rivers/pdfs/NOI-20200316-Verde-River.pdf.;

[434] Sixty-Day Notice of Endangered Species Act Violations, Verde River Drainage, CBD, March 16, 2020, https://www.biologicaldiversity.org/programs/public_lands/rivers/pdfs/NOI-20200316-Verde-River.pdf.;

In the 2021 Biological Opinion, USFWS administrators passively and inappropriately rubber stamped this management scheme in spite of concerns raised by their own species subject experts, and in spite of law to the contrary to utilize “the best scientific . . . data available.”[435]

Riparian cottonwood/willow forest is the rarest forest type in North America.[436]

More publications discuss cow grazing as a threat to western riparian ecosystems than any other single threat.[437]

Seemingly in response, the Regional Forest Service's August 24, 2018, Southwestern Region Riparian and Aquatic Ecosystem Strategy says,

> "Rivers and streambeds are conduits for life. In no other ecosystem can we as an agency have a greater impact in "*Caring for the land and serving people*."[438] Protection and enhancement of riparian and enhancement of riparian and aquatic areas is paramount in providing habitat and sustainable water for dependent fish, wildlife, plant species, and human communities alike. …"[439]
>
> "The overarching goal of this strategy is to ensure that the ecological integrity of riparian and aquatic habitats is maintained and/or restored."[440]

And now with climate change and drought, the Forest Service adds,

> "A first principle of for increasing resilience and adaptation is to avoid management actions that exacerbate the effects of current or future drought."[441]

The Regional Forest Service homage to riparian areas is consistent with what Seavy et al., say in their publication, "Why Climate Change Makes Riparian Restoration More Important than Ever," which states,

> "Riparian ecosystems are naturally resilient, provide linear habitat connectivity, link aquatic and terrestrial ecosystems, and create thermal refugia for wildlife: all characteristics that can contribute to ecological adaptation to climate change."[442]

But as we document in this Notice, the Regional Forest Service' policies to protect riparian areas mean nothing on the Coronado National Forest.

---

[435] 16 U.S.C. § 1536(a)(2).

[436] Streams of Life, The Nature Conservancy, 1987.

[437] Poff, B., Koestner, K.A., Neary, D.G. and Henderson, V., 2011. Threats to riparian ecosystems in Western North America: an analysis of existing literature 1. *JAWRA Journal of the American Water Resources Association*, *47*(6), pp.1241-1254.

[438] "What We Believe … The phrase, "Caring for the Land and Serving People," captures the Forest Service mission."; https://www.fs.usda.gov/about-agency/what-we-believe ; web accessed, January 28, 2020.

[439] USDA Forest Service Southwestern Region Riparian and Aquatic Ecosystem Strategy, August 24, 2018, https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd602126.pdf.; page 1.

[440] Id., page 2.

[441] Vose, James M., Clark, James S., Luce, Charles H., and Patel-Weynand, Toral, Effects of Drought on Forests and Rangelands in the U.S.: A Comprehensive Science Synthesis, USDA Forest Service, Gen. Tech. Report WO-93b, January 2016.

[442] Seavy, Nathaniel E., Thomas Gardali, Golet,Gregory H., Griggs, F. Thomas, Howell, Christine A., Kelsey, Rodd, Small, Stacy L., Viers, Joshua H., and Weigand, James F., Why Climate Change Makes Riparian Restoration More Important than Ever: Recommendations for Practice and Research, Ecological Restoration, Vol. 27, No. 3, 2009, September 2009.

The observations and documentation presented here in this Notice and in Center (2020) deserve and demand emergent attention and remedy.

To summarize our concerns:

1. The 2021 Biological Opinion is inadequate and illegal because:

    a. The 2021 Biological Opinion allows designated riparian Critical Habitat on the Coronado National Forest to be managed by an ineffective scheme that provides few riparian exclosures and instead uses cow grazing utilization metrics that do not protect riparian dependent endangered species.[443] This violates the legal requirement to utilize "the best scientific . . . data available."[444];

    b. The 2021 Biological Opinion's Incidental Take Statement for Chiricahua Leopard Frog is not related to the Coronado National Forest's cow grazing action, especially with ongoing frog augmentation. In addition, no protection is provided for Chiricahua Leopard Frog designated riparian Critical Habitat essential for long term survival and recovery. Multiple legal authorities speak to the inadequacy[445] of the 2021 Biological Opinion's Incidental Take Statement for Chiricahua Leopard Frog in addition to the Administrative Procedures Act, which requires federal courts to set aside agency action found to be "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with the law."[446];

    c. The 2021 Biological Opinion's Incidental Take Statement for Northern Mexican Gartersnake is not related to the Coronado National Forest's cow grazing action as the 2021 Biological Opinion utilizes inadequately protected and non-representative selective prey species as proxies for Take while failing to protect designated Northern Mexican Gartersnake riparian Critical Habitat. Without an adequate and lawful Incidental Take Statement in place, any activities likely to result in incidental take of members of listed species are unlawful.[447]

    Multiple other legal authorities speak to the inadequacy[448] of the 2021 Biological Opinion's Incidental Take Statement in addition to the Administrative Procedures Act, which requires federal courts to set aside

---

[443] Email from Sferra, Susan, to: Servoss, Jeff; RE: suggestion from Shawn [Sartorius] on grazing BO; July 5, 2019.; Yellow-billed Cuckoo Protocol Survey Results at Five Sites on the Coronado National Forest, Arizona 2021, Draft, Susan Sferra, U.S. Fish and Wildlife Service, Arizona Ecological Services, November 2021.; Grazing Impacts Input, Susan Sferra, November 11, 2021.; And the documentation provided in this Notice.

[444] 16 U.S.C. § 1536(a)(2).

[445] *Or. Nat. Res. Council v. Allen*, 476 F.3d 1031 (9th Cir. 2007).; *Wild Fish Conservancy v. Salazar*, 628 F.3d 513 (9th Cir. 2010).; *Ctr. for Biological Diversity v. Provencio*, No. 10-cv-330, 2012 WL 966031 (D. Ariz. Jan. 23, 2012).; *Ctr. for Biological Diversity v. NMFS*, 977 F. Supp. 2d 55 (D.P.R. 2013).; *Native Fish Soc'y v. NMFS*, 992 F. Supp. 2d 1095 (D. Or. 2014).; *Sierra Club v. U.S. Dep't of the Interior*, 899 F.3d 260 (4th Cir. 2018).

[446] 5 U.S.C. § 706(2)(A); *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, 422 F.3d 782, 709 (9th Cir. 2005).

[447] 16 U.S.C § 1538(a)(1)(B).

[448] *Or. Nat. Res. Council v. Allen*, 476 F.3d 1031 (9th Cir. 2007).; *Wild Fish Conservancy v. Salazar*, 628 F.3d 513 (9th Cir. 2010).; *Ctr. for Biological Diversity v. Provencio*, No. 10-cv-330, 2012 WL 966031 (D. Ariz. Jan. 23, 2012).; *Ctr. for Biological Diversity v. NMFS*, 977 F. Supp. 2d 55 (D.P.R. 2013).; *Native Fish Soc'y v. NMFS*, 992 F. Supp. 2d 1095 (D. Or. 2014).; *Sierra Club v. U.S. Dep't of the Interior*, 899 F.3d 260 (4th Cir. 2018).

agency action found to be "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with the law."[449]; and,

d. The 2021 Biological Opinion failed to include and consider the additive and cumulative impacts of riparian cow grazing and climate change in spite of USFWS' own staff concerns,[450] USFWS' own recent conclusion in another Coronado National Forest Biological Opinion that "[w]e also anticipate that climate change will degrade habitat to the point of being incapable of supporting the occurrence of yellow-billed cuckoos,"[451] and the extensive body of scientific literature that exists to the contrary.[452]

2. Reinitiation of consultation must take place expeditiously based on the facts above as well as that:

   a. the new information presented prior to and in this Notice documents effects of the Coronado National Forest's cow grazing that are affecting listed species and designated riparian Critical Habitat in a manner and to an extent not considered in the 2021 Biological Opinion; and,

   b. the new information presented prior to and in this Notice documents that cow grazing on the Coronado National Forest has been and continues to be modified in a manner that is causing an effect to listed species and their Critical Habitat that was not considered in the 2021 Biological Opinion.[453]

3. Destructive cow grazing in designated riparian Critical Habitat on the Coronado National Forest continues currently. This destructive cow grazing must cease during the new consultation to prevent the Coronado National Forest from further jeopardizing Yellow-billed Cuckoo, Chiricahua Leopard Frog and Northern Mexican Gartersnake and further destruction of their designated riparian Critical Habitat.;

   Termination of the destructive cow grazing during consultation is required by Section 7(d) of the Endangered Species Act to prevent the Coronado National

---

[449] 5 U.S.C. § 706(2)(A); *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv.*, 422 F.3d 782, 709 (9th Cir. 2005).

[450] Grazing Impacts Input, Susan Sferra, November 11, 2021.

[451] April 28, 2016, Amended Final Reinitiated Biological and Conference Opinion for the Rosemont Copper Mine, Pima County, Arizona p. 242.

[452] For example: Chiricahua Leopard Frog (*Rana chiricahuensis*) Final Recovery Plan, U.S. Fish and Wildlife Service, April 2007.; Adapting to Climate Change on Western Public Lands: Addressing the Ecological Effects of Domestic, Wild and Feral Ungulates; Robert L. Beschta, Debra L. Donahue, Dominick A. DellaSala, Jonathan J. Rhodes, James R. Karr, Mary H. O'Brien, Thomas L. Fleischner, and Cindy Deacon Williams, Environmental Management (2013) 51:474-491.; Determination of Threatened Status for the Western Distinct Population Segment of the Yellow-billed Cuckoo (*Coccyzus americanus*), Federal Register, Vol. 79, No. 192, Page 59992, October 3, 2014.; Livestock Production, Climate Change, and Human Health: Closing the Awareness Gap, Debra L. Donahue, Environmental Law Reporter, 45 ELR 11112, 12-2015, http://ssrn.com/abstract=2696741; citing: *See, e.g.*, Beschta et al., *supra* note 59, at 476-81; Ripple et al., *supra* note 2, at 2, 3. Almost nothing is known, however, about the ability of shrublands to sequester carbon. *See* Jack A. Morgan et al., *Carbon Sequestration in Agricultural Lands of the United States*, 65 J. Soil & Water Conservation 6A, 7A (2010), doi:10.2489/jswc.65.1.6A. This is a "critical research need," *see id.*, particularly since shrubs dominate large areas of the public lands.; Climate change scenarios of herbaceous production along an aridity gradient: vulnerability increases with aridity, Carly Golodets, Marcelo Sternberg, Jaime Kiegel, Bertrand Boeken, Azlmen Henkin, No'am G. Silgmean and Eugene D. Ungar, DOI 10.1007/s00442-015-3234-5, February 7, 2015.; Riparian vegetation of ephemeral streams, Stromberg, J.C., Setaro, D.L., Gallo, E.L., Lohse, K.A. and Meixner, T., *Journal of Arid Environments, 138*, 2017, pages 27-37.

[453] 50 C.F.R. § 402.16(a).

Forest from further jeopardizing the continued existence of an endangered species and from causing further destruction and adverse modification of designated riparian Critical Habitat. Specifically, Section 7(d) states that the Coronado National Forest must stop "any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures which would not violate subsection 7(a)(2)."[454]; and,

4. The Forest Service's reliance on the 2021 Biological Opinion in allowing continued cow grazing on the Coronado National Forest's designated riparian Critical Habitat on the 27 allotments[455] noted in this Notice is not legal. The Forest Service must ensure its own compliance with the Endangered Species Act as action agency "cannot abrogate its responsibility to ensure that its actions will not jeopardize a listed species" merely by relying upon a Biological Opinion issued by USFWS.[456]

The Coronado National Forest's scheme of avoiding protection of designated riparian Critical Habitat with non-applicable cow utilization metrics instead of exclosures must end to assure Yellow-billed Cuckoo, Chiricahua Leopard Frog and Northern Mexican Gartersnake survival, much less their recovery. Only complete exclusion of cows from the Coronado

[454] 16 U.S.C. § 1536(d).

[455] Clanton/Cloverdale, Geronimo, and Peloncillo allotments on the Douglas Ranger District; Bear Valley, Box Canyon, Cross S, Greaterville, Lake, Montana, Oak Tree and Rosemont allotments on the Nogales Ranger District; Deer Creek on the Safford Ranger District; Agua Caliente, Alisos, Duquesne, Farrel, Harshaw, Hayfield, Lewis, Lone Mountain, Lyle Canyon, McBeth, McFarland, Post Canyon, Proctor, San Rafael and Santa Cruz allotments on the Sierra Vista Ranger District.

[456] *Pyramid Lake Paiute Tribe v. U.S. Dep't of Navy*, 898 F.2d 1410, 1415 (9th Cir. 1990).

National Forest's designated riparian Critical Habitat can rehabilitate and truly protect these fragile areas.[457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471]

In sixty days, if you have still not taken corrective action and have not reinitiated formal consultation to correct the legal deficiencies of the 2021 Biological Opinion, in accordance with the Endangered Species Act citizen suit provision, 16 U.S.C. § 1540(g), the Center for Biological Diversity and Maricopa Audubon Society will seek judicial relief.

[457] Meehan, W.R. and Platts, W.S., 1978. Livestock grazing and the aquatic environment. *Journal of Soil and Water Conservation*, *33*(6), pp.274-278.

[458] Platts, W.S. and Wagstaff, F.J., 1984. Fencing to control livestock grazing on riparian habitats along streams: is it a viable alternative? *North American Journal of Fisheries Management*, *4*(3), pp.266-272.

[459] Platts, W.S., 1981. *Influence of forest and rangeland management on anadromous fish habitat in Western North America: effects of livestock grazing* (Vol. 7). US Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station.

[460] Szaro, R.C. and Pase, C.P., 1983. Short-term changes in a cottonwood-ash-willow association on a grazed and an ungrazed portion of Little Ash Creek in central Arizona Populus fremontii, velvet ash, Fraxinus velutina, Goodding willow, Salix gooddingii. *Rangeland Ecology & Management/Journal of Range Management Archives*, *36*(3), pp.382-384.

[461] Szaro, R.C., Belfit, S.C., Aitkin, J.K. and Rinne, J.N., 1985. Impact of grazing on a riparian gartersnake. *Johnson, RR technical coordinator. Riparian Ecosystems and Their Management: Reconciling Conflicting Uses. United States Forest Service, General Technical Report RM-120*, pp.359-363.

[462] Amended Final Reinitiated Biological and Conference Opinion for the Rosemont Copper Mine, Pima County, Arizona, April 28, 2016, p. 235.

[463] Response of breeding birds to the removal of cattle on the San Pedro River, Arizona, Krueper, D. J., J. L. Bart, and T. D. Rich. 2003. Conservation Biology 17(2): 607-615.

[464] Stromberg, J.C., 1993. Fremont cottonwood-Goodding willow riparian forests: a review of their ecology, threats, and recovery potential. Journal of the Arizona-Nevada Academy of Science, pp.97-110.

[465] Rucks, M.G., 1984. Composition and trend of riparian vegetation on five perennial streams in southeastern Arizona. In California Riparian Systems (pp. 97-108). University of California Press.

[466] Smith, J.J., 1990. Recovery Of Riparian Vegetation on An Intermittent Stream Following Removal of Cattle. In California Riparian Systems Conference, p. 217.

[467] Cannon, R.W. and Knopf, F.L., 1984. Species composition of a willow community relative to seasonal grazing histories in Colorado. *The Southwestern Naturalist*, *29*(2), pp.234-237.

[468] Klebenow, D.A. and Oakleaf, R.J., 1984. Historical avifaunal changes in the riparian zone of the Truckee River.

[469] Taylor, D. M., and C. D. Littlefield. 1986. Willow flycatcher and yellow warbler response to cattle grazing. American Birds 40:1169-1173.

[470] Amended Final Reinitiated Biological and Conference Opinion for the Rosemont Copper Mine, Pima County, Arizona, USFWS, April 28, 2016, pages 235 and 248.

[471] Poessel, S.A., J. C. Hagar, P. K. Haggerty, and T. E. Katzner. 2020. Removal of cattle grazing correlates with increases in vegetation productivity and in abundance of imperiled breeding birds. Biological Conservation 241 (2020) 108378: 1-9. www.elsevier.com/locate/biocon.

CONTACT INFORMATION

If you have further questions, please contact Robin Silver, M.D., Center for Biological Diversity, P.O. Box 1178, Flagstaff, AZ 86002, by mail; by phone: (602) 799-3275, or by Email: rsilver@biologicaldiversity.org.

Sincerely,

Chris Bugbee
Southwest Conservation Advocate

Robin Silver, M.D.
Co-Founder and Board Member
Center for Biological Diversity

CC: AGFD Director Ty Gray