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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF ARIZONA

Center for Biological Diversity, Plaintiff, v. United States Fish and Wildlife Service, et al., Defendants.	No. CV-22-00286-TUC-JGZ **ORDER**

Plaintiff Center for Biological Diversity (CBD) filed this action against Defendants United States Fish and Wildlife Service and Debra Haaland (collectively FWS), pursuant to 16 U.S.C. § 1540(c) and (g), challenging FWS's denial of CBD's second petition to protect the Tucson shovel-nosed snake under the Endangered Species Act (ESA). (*See* Doc. 1.) The parties agree, under 16 U.S.C. § 1533(b)(3)(A), CBD's petition to list the snake must have presented "substantial scientific or commercial information indicating that the petitioned action may be warranted." (Docs. 20 at 8; 22 at 7.) CBD argues FWS arbitrarily rejected substantial information, including a letter and study cited by CBD, which indicated that listing the snake under the ESA might be warranted. (Doc. 20 at 20.) FWS argues CBD's petition, including the letter and study, proposed an alternative range for the snake but provided no substantial information. (Doc. 22 at 18–20.) To resolve CBD's challenge, the parties have filed cross-motions for summary judgment. (Docs. 19, 21.) The motions are fully briefed. (Docs. 19–24.) Oral argument was held on August 11, 2023. For the reasons that follow, the Court will grant FWS's motion and deny CBD's motion.

I. Background

A. The Endangered Species Act and Citizen Petitions

Congress designed the ESA to protect endangered or threatened species. 16 U.S.C. § 1531. Under the ESA, a species is "endangered" if it is "in danger of extinction throughout all or a significant portion of its range." *Id.* § 1532(6). A species is "threatened" if it is "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." *Id.* § 1532(20). The responsibility for implementation of the ESA lies with the Secretaries of Commerce and Interior, who have delegated the responsibility to FWS with respect to terrestrial species. *Id.* §§ 1532(15), 1533(a)(2); 50 C.F.R. § 402.01.

FWS considers five factors when determining whether a species is endangered or threatened: (1) "the present or threatened destruction, modification, or curtailment of its habitat or range"; (2) "overutilization for commercial, recreational, scientific, or educational purposes"; (3) "disease or predation"; (4) "the inadequacy of existing regulatory mechanisms"; or (5) "other natural or manmade factors affecting its continued existence." 16 U.S.C. § 1533(a)(1). FWS must base its listing determinations solely on the best scientific and commercial data available. *Id.* § 1533(b)(1)(A).

Individuals may petition FWS to add a species to the list of endangered and threatened species. *Id.* § 1533(b)(3)(A). Individuals may also petition FWS to remove a species from the list. *Id.* When FWS receives these petitions, it must make a finding, to the maximum extent practicable, within 90 days. *Id.* FWS's finding turns on "whether the petition presents ***substantial scientific or commercial information indicating that the petitioned action may be warranted***." *Id.* (emphasis added). Substantial scientific or commercial information "refers to credible scientific or commercial information in support of the petition's claims such that a reasonable person conducting an impartial scientific review would conclude that the action proposed in the petition may be warranted." 50 C.F.R. § 424.14(h)(1)(i). The "substantial scientific or commercial information" finding depends in part on the degree to which the petition includes:

> (1) Information on current population status and trends and estimates of current population sizes and distributions, both in captivity and the wild, if available;
>
> (2) Identification of the factors under section 4(a)(1) of the Act that may affect the species and where these factors are acting upon the species;
>
> (3) Whether and to what extent any or all of the factors alone or in combination identified in section 4(a)(1) of the Act may cause the species to be an endangered species or threatened species (i.e., the species is currently in danger of extinction or is likely to become so within the foreseeable future), and, if so, how high in magnitude and how imminent the threats to the species and its habitat are;
>
> (4) Information on adequacy of regulatory protections and effectiveness of conservation activities by States as well as other parties, that have been initiated or that are ongoing, that may protect the species or its habitat; and
>
> (5) A complete, balanced representation of the relevant facts, including information that may contradict claims in the petition.

Id. § 424.14(d). FWS may also consider information readily available at the time the determination is made. *Id.* § 424.14(h)(1)(ii).

"The 'substantial scientific or commercial information' standard must be applied in light of any prior reviews or findings the Services have made on the listing status of the species that is the subject of the petition." *Id.* § 424.14(h)(1)(iii). When FWS has already conducted a finding in response to a petition to list a species, FWS will evaluate any future petition seeking to list that species despite the previous review or finding. *Id.* "Where the prior review resulted in a final agency action, a petitioned action generally would not be considered to present substantial scientific and commercial information indicating that the action may be warranted ***unless the petition provides new information not previously considered***." *Id.* (emphasis added).

If FWS determines that a petition does not present substantial scientific or commercial information showing that the petitioned action may be warranted (a negative 90-day finding), then FWS has performed a final agency action subject to judicial review. 16 U.S.C. § 1533(b)(3)(C)(ii). If FWS determines that a petition does present substantial scientific or commercial information showing that the petitioned action may be warranted (a positive 90-day finding), then FWS begins a status review of the species. *Id.* §

1533(b)(3)(B)(ii)-(iii). Within 12 months of a positive 90-day finding, FWS must determine whether the petitioned action is warranted, not warranted, or warranted but precluded (a 12-month finding). *Id.*

B. Petitions To List the Tucson Shovel-Nosed Snake

The Tucson shovel-nosed snake is a small sand-swimming non-venomous snake with red and black stripes and a cream-colored body. (AR 551, 570, 982.) Since 1941 the Tucson shovel-nosed snake has been recognized as a subspecies of the western shovel-nosed snake. (AR 554.) The Tucson shovel-nosed snake's original subspecies description was based on its color pattern, which differentiated it from the other subspecies of western shovel-nosed snakes. (*Id.*)

1. CBD's 2004 90-Day Petition

In 2004, CBD first petitioned FWS to list the Tucson shovel-nosed snake under the ESA. (AR 502–28.) In 2008, FWS issued a positive 90-day finding. (AR 529–34.) At the time, FWS accepted the original taxonomic status and distribution of the Tucson shovel-nosed snake as described by Mahrdt et al. (2001), which supported a limited range in central Arizona, encompassing about 2,840,147 acres between Phoenix and Tucson. (AR 554, 647.) The exact range of the subspecies, however, was never described. (AR 554, 647.) A large area, known as an intergrade zone, was thought to exist where the ranges of the Tucson shovel-nosed snake and another subspecies overlapped. (AR 554, 647.)

After the positive 90-day finding, mitochondrial DNA studies were conducted to explore the taxonomy and genetic structure of the Tucson shovel-nosed snake and the intergrade zone. (AR 554, 647.) Because the resulting data initially suggested the Tucson shovel-nosed snake was not a valid subspecies, FWS requested peer review and more input. (AR 554, 647.) Four of six peer reviewers concluded the Tucson shovel-nosed snake did not warrant taxonomic recognition but acknowledged more conclusive genetic study, including microsatellite data, was needed. (AR 554, 647.)

The reason for more genetic research rested in the difference between mitochondrial and microsatellite DNA studies. (AR 536–37.) Mitochondrial DNA represents a single

genetic locus that accumulates mutations slowly and typically reflects deep historical separation of groups rather than more recent differences shaped by an organism's ecology and environment. (*Id.*) Microsatellites, by contrast, are numerous short DNA segments distributed throughout the genetic material of an organism. (*Id.*) They are a highly variable marker widely accepted as appropriate for detecting recent changes in subspecies, such as the Tucson shovel-nosed snake and the other western shovel-nosed snake subspecies. (*Id.*)

2. FWS's 2010 12-Month Finding

In 2010, FWS issued a 12-month finding, concluding that listing the Tucson shovel-nosed snake was warranted but precluded by higher priority actions. (AR 535–50.) The FWS also acknowledged, because the above microsatellite study was not complete, that the best available scientific information at that time continued to recognize the Tucson shovel-nosed snake as a subspecies. (AR 537, 554–55, 647.) The 12-month finding also continued to recognize Mahrdt's representation of the snake's range. (AR 537, 554–55, 647.)

3. 2014 USGS Study

After FWS's 2010 finding, additional genetic research was completed showing the Tucson shovel-nosed snake was a valid subspecies with a much larger range than previously believed. (AR 555, 575–80, 589–91, 647.) Specifically, a 2014 U.S. Geological Survey (USGS) Study used both mitochondrial DNA and microsatellite datasets to investigate the species-subspecies boundaries of western shovel-nosed snakes (*Chionactis occipitalis*). (AR 3542.) These subspecies included the Mojave (*C. o. occipitalis*), Colorado (*C. o. annulata*), Nevada (*C. o. talpina*), and Tucson (*C. o. klauberi*) shovel-nosed snakes. (*Id.*)

Analysis of mitochondrial DNA yielded three distinct mtDNA lineages: Mojave, Colorado, and Sonoran (Tucson). (AR 3544–45.) Surprisingly, the Sonoran lineage included two geographically distinct clades (clades c and d). (*See* AR 3545.) These clades encompassed the range of the Tucson shovel-nosed snake as well as portions of the ranges of the Mojave and Colorado shovel-nosed snakes. (*Id.*) Researchers found clade c in central

Arizona and clade d near the Arizona-California border. (*Id.*) In between clades c and d, researchers identified another clade (clade e), which reflected the range of Colorado and Tucson shovel-nose-snake intergrades. (*Id.*)

Findings from the microsatellite loci confirmed the broad range of a Sonoran shovel-nosed snake subspecies. (AR 3546, 3550.) A Sonoran cluster covered the Tucson shovel-nosed snake's range, a small portion of the Colorado shovel-nosed snake's range, and portions of the intergrade zone. (AR 3546.) This cluster extended from southern Arizona to the California-Arizona border. (*Id.*) Similarly, a Colorado cluster encompassed the Colorado shovel-nosed snake's range and portions of the intergrade zone, extending towards California, Arizona, and Mexico. (*Id.*) Interbreeding between the Tucson and Colorado shovel-nosed snakes was apparent in the intergrade zone and researchers inferred higher gene migration from the Sonoran cluster into the Colorado cluster. (AR 3546–47.) The Mojave cluster, by contrast, encompassed the ranges of the Mojave and Nevada shovel-nosed snakes and was largely exclusive. (AR 3545–47.) In considering the snakes' genetic and phenotype traits, researchers concluded two species designations were warranted for the Colorado-Sonoran and Mojave clusters. (AR 3550.) They also recommended recognizing the Sonoran cluster as a subspecies present across Arizona based on its genetic structure. (*Id.*)

4. FWS's 2014 SSA and New 12-Month Finding

In 2014, FWS completed a species status assessment (SSA). (AR 551–644.) In the SSA, the FWS interpreted the 2014 USGS Study's findings on the Tucson shovel-nosed snake in the context of other studies and estimated that the Tucson shovel-nosed snake's range was 274% larger and included about 7,783,875 acres of land. (AR 555, 577–80.) This range stretched throughout central and western Arizona in Pinal, Maricopa, Yavapai, Yuma, Pima, and La Paz Counties. (AR 551.) In defining this larger range for the snake, FWS did not look to color pattern, which varied among Tucson shovel-nosed snakes, and instead relied on the USGS Study's genetic data. (AR 555, 577–79.) FWS cited studies which established the reliability of genetic evidence and warned that reliance on color

pattern when defining subspecies could not only lead to confusion but impede scientific progress. (AR 579.)

In the same year, FWS published a new 12-month finding, concluding that listing the Tucson shovel-nosed snake was not warranted. (AR 645–53.) FWS stated it relied on genetic data rather than color pattern when defining the snake's range:

> We recognize that there is considerable color pattern variation throughout the range of the Tucson shovel-nosed snake; however, the genetic data indicate that, despite the color pattern expressed, snakes previously thought to be a different subspecies within this range are genetically Tucson shovel-nosed snakes.

(AR 647.) FWS defined the snake's range as stated in the SSA: 7,783,875 acres of land across central and western Arizona in Pinal, Maricopa, Yavapai, Yuma, Pima, and La Paz Counties. (*Id.*)

5. CBD's 2020 90-Day Petition

In October 2020, CBD submitted to FWS a second petition to list the Tucson shovel-nosed snake. (AR 449–80.) CBD argued FWS's 2014 not-warranted finding overestimated the Tucson shovel-nosed snake's range, erroneously interpreted the 2014 USGS Study, inaccurately defined the snake's habitat, and made poor assumptions about land management in the snake's range. (AR 453.) CBD also asserted the snake faced several threats, including the proposed construction of an interstate and snake fungal disease. (AR 466–68.) Construction of Interstate 11, argued CBD, would disrupt the snake's habit, as defined by the range suggested by CBD. (AR 457, 466–67.) CBD argued snake fungal disease posed a threat because, in a 2019 study, two individual snakes in Arizona, one gartersnake and one kingsnake, tested positive for the disease. (AR 467–68.) CBD cited only two post-2014 sources that specifically addressed the Tucson shovel-nosed snake: Rosen's 2015 letter and Rosen and Bradley's 2020 study. (*See* AR 449–80.)

6. Rosen's 2015 Letter and Rosen and Bradley's 2020 Study

In May 2015, Philip Rosen, a research scientist at the University of Arizona, wrote a letter to FWS, criticizing its not-warranted finding, SSA, and interpretation of the USGS Study. (AR 3061–74.) In support of his criticisms, Rosen relied on pre-2014 studies. (*See*

id.) For some criticisms, including his critiques of FWS's habitat model and interpretation of gene introgression, Rosen suggested further research was necessary. (AR 3065, 3069.) He also discussed a hypothesis for the Tucson shovel-nosed snake's unique color pattern and expressed disagreement with FWS's sole reliance on genetics in defining the snake's range. (AR 3071–73.) Rosen did not explain why the consideration of color pattern was necessary in defining subspecies or why reliance on genetic evidence was scientifically inaccurate. (*See* AR 3061–74.) Rosen ended his letter arguing FWS should afford "special weight" to the "pure" Tucson shovel-nosed snake populations. (AR 3073.)

In 2020, Rosen and CBD's Curtis Bradley published an article on the Tucson shovel-nosed snake in the *Sonoran Herpetologist*. (AR 1418–25.) They developed a habitat model for the snake with research methods that proceeded in three parts: occurrence and absence records, environmental predictors, and Random Forest model. (AR 1419–1421.) First, Rosen and Bradley analyzed records and formed a dataset representing the occurrence of the Tucson shovel-nosed snake. (AR 1419.) The narrow subset of occurrence records they selected represented only Tucson shovel-nosed snakes which bore the snake's traditionally known color pattern and matched the genetic structure of the snake. (*Id.*) Using this narrow subset, Rosen and Bradley created a range for the snake in central Arizona that was less than half the size of FWS's range. (*Id.*; AR 1422.)

The next step in Rosen and Bradley's study involved assembling 38 environmental variables, such as slope and elevation, which are important to the Tucson shovel-nosed snake. (AR 1420.) Finally, Rosen and Bradley analyzed their narrow dataset of Tucson shovel-nosed snakes by using the Random Forest data-mining algorithm. (AR 1421.) This algorithm mapped an estimated habitat suitability, based on the 38 variables, across the range they created for the Tucson shovel-nosed snake. (*Id.*) Based on this analysis, Rosen and Bradley concluded that 60% of their estimated range for the snake was vulnerable to loss from urbanization and the construction of a new interstate. (*Id.*) Their study did not collect or analyze new genetic data, investigate whether genetics are the scientifically superior method for defining subspecies, or investigate the importance of considering color

pattern when defining subspecies. (*See* AR 1418–25.)

7. FWS's 2021 Negative 90-Day Finding

In September 2021, FWS issued a negative 90-day finding. (AR 497–501 (Federal Register notice); AR 481–94 (petition review form).) FWS concluded CBD's 2020 petition did not provide substantial scientific or commercial information indicating that listing the Tucson shovel-nosed snake might be warranted. (AR 501.) In its negative 90-day finding, FWS stood by its decision that genetic analysis, rather than color pattern, provided a better scientific means of defining the Tucson shovel-nosed snake. (*Id.*) As a result, FWS maintained the snake's range in central and western Arizona and rejected the narrower range proposed by CBD. (AR 500–01.) FWS also determined that almost all information about potential threats to the snake cited in the petition were previously considered in FWS's 2014 not-warranted finding, including the threat of disease. (AR 488–89, 501.) FWS acknowledged that CBD provided new information about the proposed construction of Interstate 11. (*Id.*) Yet FWS determined its previous finding already considered such future developments and Interstate 11 was unlikely to significantly affect the Tucson shovel-nosed snake. (*Id.*)

In June 2022, CBD filed this action, challenging only FWS's 2021 negative 90-day finding. (Doc. 1 ¶¶ 14–16.) The Court has jurisdiction pursuant to 16 U.S.C. § 1540(c), (g) and 28 U.S.C. § 1331.

II. Standard of Review

The Administrative Procedure Act (APA) governs the review of an agency's compliance with the ESA. *Greater Yellowstone Coal., Inc. v. Servheen*, 665 F.3d 1015, 1023 (9th Cir. 2011). Under the APA, a court shall hold unlawful and set aside agency action that is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A). An agency decision is arbitrary and capricious if the agency relied on factors which Congress did not intend it to consider; completely failed to consider an important facet of the problem; or provided an explanation for its decision that conflicts with the evidence before the agency or is so implausible it could not be attributed

to the product of agency expertise or a difference in view. *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983). The scope of this review is narrow; the court should not substitute its judgment for that of the agency. *Id.*

The only question before the court is whether the agency considered the relevant factors and articulated a rational connection between the facts found and its ultimate finding. *See Nw. Ecosystem Alliance v. USFWS*, 475 F.3d 1136, 1145 (9th Cir. 2007). Summary judgment is an appropriate mechanism for deciding the legal question of whether, under the APA, the agency could reasonably have found the facts as it did. *Occidental Eng'g Co. v. INS*, 753 F.2d 766, 770 (9th Cir. 1985).

III. Analysis

In support of its contention that FWS arbitrarily and capriciously denied CBD's second petition to list the Tucson shovel-nosed snake, CBD advances three arguments: (1) CBD presented new and substantial information in its second petition; (2) FWS applied an overly stringent standard of review; and (3) FWS failed to address CBD's new information about Interstate 11 and snake fungal disease. (Doc. 20 at 19.) The Court will address each argument in turn.

A. New or Substantial Information

FWS's denial of CBD's 2020 petition turns on whether CBD presented "***substantial scientific or commercial information*** indicating that the petitioned action may be warranted." *See* 16 U.S.C. § 1533(b)(3)(A) (emphasis added). Because FWS had issued a previous not-warranted finding, CBD's petition "generally would not be considered to present substantial scientific and commercial information . . . ***unless the petition provides new information not previously considered***." *See* 50 C.F.R. § 424.14(h)(1)(iii) (emphasis added). In support of its argument that FWS abused its discretion when it concluded CBD's petition lacked new and substantial information, CBD points to two documents cited in the petition: Rosen's 2015 letter and Rosen and Bradley's 2020 study. (Doc. 20 at 20–22.) These documents, however, do not establish that FWS's decision was arbitrary and capricious.

1. Rosen's 2015 Letter

In his 2015 letter, Rosen criticized FWS's identification of the Tucson shovel-nosed snake as a habitat generalist and its conclusions regarding the snake's genetic distribution, habitat fragmentation, and local distribution.[1] (AR 3061.) Evidence in the record supports FWS's conclusion that these criticisms were not new or substantial information. (*See* AR 491, 501.) Rosen relied on pre-2014 studies to support his criticisms related to habitat and genetic distribution, including three studies he authored in 2003, 2004, and 2008. (AR 3062–64.) Rosen acknowledged the 2014 SSA cited these older studies. (*Id.*) Further, Rosen's identification of areas in the snake's local distribution, which he argued FWS should exclude, was not new or substantial information. (AR 3065.) Rosen even expressed uncertainty about the extent of his argument and stated he was developing a new habitat model to clarify this issue. (*Id.*) Rosen also acknowledged that the 2014 USGS Study identified an intergrade zone showing gene migration from the Sonoran cluster into the Colorado cluster. (AR 3069.) Rosen disagreed and suggested the opposite was true (higher gene migration from the Colorado cluster into the Sonoran cluster). (*Id.*) However, in doing so, Rosen cited no sources in support and simply stated: "This requires further study." (*Id.*)

Rosen also challenged how FWS used the 2014 USGS Study to define the snake's range, relying on portions of the Study with which he agreed and ignoring portions with which he disagreed. This analysis of the range was neither new nor substantial information requiring FWS to conclude that listing the snake might be warranted. For example, Rosen argued the USGS Study "never conclude[d] that the snake's range should be expanded to include the area near the California border." (AR 3067.) The Study found that mtDNA clade e, in western Arizona, "could not be grouped with confidence to either the Colorado or Sonoran lineages." (AR 3067, 3550.) But the Study also found that phylogenetic

[1] CBD argues FWS incorrectly identified the Tucson shovel-nosed snake as a habitat generalist. (Doc. 20 at 20.) This assertion, however, relies in large part on the range of the snake. If the Tucson shovel-nosed snake exists only in CBD's proposed range, this assertion might be true. Yet, as discussed below, FWS had a rational basis for concluding the snake's range was larger and extended across central and western Arizona. In the context of this range, FWS identifying the Tucson shovel-nosed snake as a habit generalist was not unreasonable.

relationships based on mtDNA were "misleading," (AR 3550), and the more accurate Sonoran nDNA clusters encompassed central *and* western Arizona, including portions of the intergrade zone (mtDNA clade e), (AR 3546–47).[2]

Rosen concluded his letter by arguing for a definition of "pure" Tucson shovel-nosed snakes that gives "special weight to those parts of the range where adaptive phenotypic [or observable] traits are fully and consistently displayed."[3] (AR 3072–73.) Under this definition, argued Rosen, the snake's range would narrow significantly and remain only in central Arizona. (*Id.*) In support of his proposed range, Rosen presented a hypothesis that the snake had a unique color pattern, which Rosen explained was an adaptive variation that likely helped Tucson shovel-nosed snakes mimic coralsnakes. (AR 3072.) This hypothesis was not new information. FWS's 2014 SSA noted, on its first page, that Tucson shovel-nosed snakes mimic the color pattern of coralsnakes. (AR 551.) More importantly, Rosen neither explained why the consideration of color pattern was necessary in defining subspecies populations nor addressed the reasoning in the SSA underlying FWS's 2014 decision to rely on genetic data. Indeed, the SSA stated reliance on color pattern when defining subspecies could result in "confusion" and "describing . . .

[2] At Oral Argument, CBD stated Rosen's letter pointed out that the 2014 USGS Study suggested northwestern Maricopa County rather than La Paz County was the western boundary for the Tucson shovel-nosed snake. The paragraph in the Study, which CBD referred to at Oral Argument, summarizes research from 1951. (AR 3549.) This research found snakes similar to the Tucson shovel-nosed snake (as it was recognized at the time) in northwestern Maricopa County. (*See id.*) The USGS Study stated these findings from 1951 "corroborate well with the [USGS Study's] inferred cluster boundaries." (*Id.*) Those inferred cluster boundaries, however, extend past Maricopa County to La Paz County. (*See* AR 3546–48.) The USGS Study cited the 1951 data as further support for *including* Maricopa County in the Sonoran cluster. It did not suggest *ending* the cluster's western boundary at Maricopa County.

[3] In line with its argument for a "pure" Tucson shovel-nosed snake, CBD argues FWS oversimplified the USGS Study "by including all geographic regions with *any* genetic connection to [the snake] as part of its defined range." (Doc. 20 at 22.) Not so. The USGS Study identified an mtDNA clade with Sonoran lineage in California and found some gene migration from the Sonoran cluster into the Mojave cluster. (AR 3545–47.) Despite this, FWS did not include the Mojave cluster's geographic distribution in California as part of the snake's range. (*Id.*; AR 563.)

subspecies from a few characters may not simply be a harmless handle of convenience for museum curators, but may be detrimental to understanding evolutionary history." (AR 578–79.) FWS thus had a rational basis for concluding Rosen's hypothesis and alternative subspecies definition were not new or substantial information.

CBD argues FWS adopted an either-or approach to considering genetics and color patterns, an approach which was rejected by the USGS Study. (Doc. 23 at 12.) This is not accurate. FWS's approach to defining the snake's range based on genetics rather than color pattern was consistent with the USGS Study, which considered color pattern for species (but not subspecies) classification. At the species level, the Study proposed two classifications based on the Mojave and Colorado-Sonoran clusters. (AR 3550.) The Study also found this genetic classification consistent with color pattern: the Mojave cluster has brown primary crossbands and the Colorado-Sonoran cluster has black primary crossbands paired with red-to-orange secondary crossbands. (AR 3550.) At the subspecies level, however, the Study recommended classification based on the genetic structure of the Colorado and Sonoran clusters without considering their respective color patterns. (*Id.*) CBD's desired subspecies classification for the Sonoran cluster, based on color pattern, was not recommended by the USGS Study. The record shows no new or substantial information requiring FWS to reconsider its genetics-based classification of the subspecies.

2. Rosen and Bradley's 2020 Study

In a 2020 study, Rosen and CBD's Curtis Bradley collaborated on a habitat model of the Tucson shovel-nosed snake.[4] (AR 1418–25.) Rosen and Bradley, however, developed this habitat model using a narrow subset of data from the 2014 USGS Study that reflected only snake populations that met Rosen's criteria for a "pure" Tucson shovel-nosed snake. (*See id.*; AR 3072–73.) Their conclusions about the snake's habitat and endangerment thus rest on an unsupported assumption about the snake's range.

[4] CBD asserts Rosen and Bradley's 2020 Study was peer reviewed by Dustin Wood, one of the authors of the 2014 USGS Study. (Doc. 23 at 11.) The 2020 Study states: "We thank Dustin Wood (USGS) and Derek Lee (Wild Nature Institute) for their helpful review and comments on this manuscript." (AR 1424.) The Study neither states it underwent a formal peer review process nor indicates Wood agreed with the Study's methods or conclusion.

The methods used by Rosen and Bradley demonstrate their reliance on this unsupported assumption and show why FWS was justified in not giving the study greater weight. First, Rosen and Bradley began their study with a dataset from the USGS Study, mtDNA clade c, which represented the Sonoran (Tucson) lineage of western shovel-nosed snakes in central Arizona. (AR 1419, 3545.) In so doing, they excluded clade d from their dataset despite the USGS Study's conclusion that, based on mtDNA, clade d had the same Sonoran lineage. (AR 1419, 3545.) Next, they placed this narrower dataset (clade c) over the broader nDNA dataset of Sonoran cluster c, which stretched across Arizona towards the Arizona-California border. (AR 1419, 3548.) The range of the Tucson shovel-nosed snake, according to Rosen and Bradley, was where the narrow mtDNA and broader nDNA datasets overlapped. (AR 1419.) As a result, the final dataset used by Rosen and Bradley encompassed only central Arizona and excluded snakes near the Arizona-California border that matched the mtDNA and nDNA structure of Tucson shovel-nosed snakes. Rosen and Bradley's stated reason for whittling down the USGS Study's genetic datasets was to exclude snakes that had observable traits, such as color pattern, that differed from the original Tucson shovel-nosed snakes:

> Our genetics-based range interpretation . . . excludes geographic populations that are markedly dissimilar to [the Tucson shovel-nosed snake] on the basis of morphological characters . . . . The new model we present is thus consistent with morphometric as well as genetic data and better represents the color pattern characteristics upon which the subspecies was originally based.

(AR 1423–24.)

FWS had a rational basis for concluding this study offered no new or substantial information to support CBD's narrow range or concerns of habitat loss based on its narrow range. Rosen and Bradley reinterpreted portions of the USGS Study's data but did not collect any of their own data.[5] Nor did they cite to more recent studies with new genetic

[5] CBD argues Rosen and Bradley's 2020 study "utilized *more extensive* genetic information than relied upon by [FWS]." (Doc. 23 at 11.) Rosen and Bradley's 2020 study offered no new genetic data not previously considered by FWS in 2014. (*See* AR 1418–25.)

findings or investigate whether color pattern and observable traits were better determinants than genetics for a subspecies' range. Nor did they address any of the concerns raised in the SSA regarding the potential harm and confusion which may result from defining subspecies by observable traits. Instead, they started with an unsupported premise: the Tucson shovel-nosed snake's range only encompasses genetically and morphologically similar populations. Then, building on that premise, they developed a new habitat model and presented new findings about threats within that habitat. The novelty of those findings, however, cannot prove the assumption upon which they are based.

B. Whether FWS Applied the Correct Standard of Review

FWS was required to consider whether CBD's petition presented and was supported by credible scientific or commercial information "such that a reasonable person conducting an impartial scientific review would conclude that the action proposed in the petition may be warranted." *See* 50 C.F.R. § 424.14(h)(1)(i). CBD argues that Rosen's 2015 letter and Rosen and Bradley's 2020 study establish that reasonable persons disagree with FWS as to whether listing the Tucson shovel-nosed snake might be warranted. (Doc. 20 at 23–24.) Internal FWS correspondence, argues CBD, further support FWS's awareness of a disagreement among biologists on "the interpretation of the range based on genetics." (*Id.*) CBD thus contends FWS applied an overly stringent standard of review by denying the petition and ignoring evidence of a disagreement among reasonable persons. (*Id.*)

FWS's review was not overly stringent. In considering CBD's petition, FWS had to evaluate not only whether a reasonable person would conclude listing the snake might be warranted but also whether that conclusion rested on an "impartial scientific review" of "credible scientific or commercial information." *See* 50 C.F.R. § 424.14(h)(1)(i). Put differently, FWS may deny a petition even when persons disagree, if their disagreement is not supported by credible scientific evidence. Here, FWS had a rational basis for concluding the information provided to support Rosen and Bradley's position was not credible scientific evidence. Rosen's 2015 letter discussed scientific evidence previously considered by FWS and presented an unsupported classification of "pure" Tucson shovel-

nosed snakes, which conflicted in part with the USGS Study.[6] The 2020 study did not address the core of Rosen and Bradley's disagreement with FWS: whether the snake's range should rest on the subspecies' genetic structure or traditionally known color pattern. Instead, the study assumed the range should incorporate both factors and mapped and analyzed the snake's habit accordingly. In its denial of the petition, FWS identified this problem and provided a rational basis for rejecting the 2020 study:

> [CBD] claimed that [FWS] misinterpreted [the USGS Study]. Instead, [CBD] limited the current range of the subspecies to include snakes that share genetic characteristics with [the Tucson shovel-nosed snake] and also have the same color pattern . . . . [CBD's] definition of the current range is incorrect because it relies on color pattern.

(AR 482–83.)

The cases cited by CBD are inapposite. CBD cites to *Buffalo Field Campaign v. Zinke*, 289 F. Supp. 3d 103 (D.D.C. 2018), and *Center for Biological Diversity v. Kempthorne*, No. C 06-04186 WHA, 2007 WL 163244 (N.D. Cal. Jan. 19, 2007). In *Buffalo Field Campaign*, the petitioner relied on a study that called into question bison population targets. 289 F. Supp. 3d at 110. The court determined that FWS's denial of the petition was arbitrary and capricious because FWS failed to explain why the study was not credible. *Id.* Here, FWS provided a rational explanation for rejecting the Rosen and Bradley study: it assumed the Tucson shovel-nosed snake's range should be defined by genetics and color pattern but conducted no scientific investigation on that issue. (*See* AR 482–83, 491.) In *Kempthorne*, the Court determined the petitioner presented evidence in its petition to support each important link in its theory that certain salamanders were endangered or threatened. 2007 WL 163244, at *6. The same cannot be said here. Namely, CBD failed to present credible scientific evidence showing the range of the Tucson shovel-nosed snake should exclude snake populations with matching genetic structures because they bare a color pattern different from the snake's traditionally known color pattern.

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[6] *See supra* note 2 and accompanying text.

C. Interstate 11 and Snake Fungal Disease

CBD contends its petition included new and substantial information about the threat that proposed Interstate 11 and snake fungal disease pose to the Tucson shovel-nosed snake. (Doc. 20 at 25–26.) As FWS explained in its negative 90-day finding, FWS previously considered future developments, such as Interstate 11, and estimated that the interstate, if completed, would cause an additional loss of just 0.01% of the snake's habitat. (AR 486–87.) CBD's concerns about Interstate 11 rest in its proposed narrowed range for the snake, (*see* AR 1422), which the Court has concluded FWS was within its rights to reject. Accordingly, because the development of Interstate 11 results in a minor loss of habitat when viewed in the context of FWS's larger range for the snake, FWS had a rational basis for concluding the proposed construction of Interstate 11 was not substantial information. FWS also had a rational basis for determining the threat of snake fungal disease was not new or substantial information. CBD points to a 2019 study showing two snakes in Arizona, one gartersnake and one kingsnake, tested positive for the disease. (AR 467–68.) CBD's information about snake fungal disease demonstrates a generic threat of disease in the ecosystem but not a specific threat to the Tucson shovel-nosed snake. As FWS explained in its negative 90-day finding, the generic threat of disease was previously considered in its 2014 not-warranted finding. (AR 488–89.)

IV. Conclusion

Accordingly,

IT IS ORDERED:

1. CBD's Motion for Summary Judgment (Doc. 19) is **denied**.

2. FWS's Cross-Motion for Summary Judgment (Doc. 21) is **granted**.

3. The Clerk of Court must enter judgment accordingly and close its file in this action.

Dated this 22nd day of August, 2023.

Jennifer G. Zipps
United States District Judge