



Questions and Answers: Tucson Shovel-nosed Snake “Warranted but Precluded” Finding

Arizona Ecological Services Field Office

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Q: What is the Tucson shovel-nosed snake and where is it found?

A: The Tucson shovel-nosed snake (*Chionactis occipitalis klauberi*) is one of four shovel-nosed subspecies. They are small snakes (10-17 inches in length) with a shovel-shaped snout and coloring that mimics coral snakes. Shovel-nosed snakes are primarily nocturnal and move by “sand swimming” – a sideways swaying motion while either on or under sand or loose soil. Feeding primarily on scorpions, beetle larvae, spiders, and centipedes, they occur in soft, sandy floodplains in creosote/mesquite-dominated desert areas of Pima, Pinal and Maricopa counties in south-central Arizona.

Q: What is a status review and 12-month finding?

A: Under the Endangered Species Act (ESA), citizens or groups can petition the U.S. Fish and Wildlife Service (Service) and NOAA Fisheries Service to consider adding a species to the Federal List of Endangered and Threatened Species. The ESA requires that, for any petition to revise the List of Threatened and Endangered Species that contains substantial scientific and commercial information that listing may be warranted, the Service must make a finding within 12 months of the date of receipt of the petition on whether the petitioned action is (a) not warranted, (b) warranted, or (c) warranted, but that the immediate proposal of a regulation implementing the petitioned action is precluded by other pending proposals to determine whether any species is threatened or endangered. A status review includes requesting and gathering the best available scientific and commercial information relevant to a species and threats to it, and evaluation of all available information. This becomes the basis of the 12-month finding.

Q: What is the result of the Service’s status review and 12-month finding for the Tucson shovel-nosed snake?

A: We found that the Tucson shovel-nosed snake is threatened throughout its entire range. Threats affecting the subspecies include: habitat loss and fragmentation (due to urban and rural development; road construction, use and maintenance; potential solar power facilities; agriculture; and wildfires) and lack of adequate management and regulation.

Q: The petition requested that the Service consider listing the Tucson shovel-nosed snake and its “intergrade zone” with the Colorado Desert subspecies. What is an intergrade zone and how was it evaluated?

A: An intergrade zone is an area of overlap between the ranges of two subspecies where individuals may possess intermediate characters or traits of both subspecies. It is generally recognized and accepted by practitioners of subspecies taxonomy (the science of species classification) that intergrade zones may exist between the ranges of two subspecies where the diagnostic characters of both subspecies may be found.

The petition requested that the Service consider an “intergrade zone” between the Tucson shovel-nosed snake and the Colorado Desert shovel-nosed snake (*Chionactis occipitalis annulata*) as part of the Tucson shovel-nosed snake’s range. We determined that including shovel-nosed snakes within the intergrade zone between subspecies would not be consistent with current scientific practice, and therefore we did not include them in our analysis.

Q: There are questions surrounding the genetics and taxonomy of shovel-nosed snakes; how were taxonomic considerations treated in the 12-month finding?

A: Recent research studying the genetic variation of mitochondrial DNA within the species (*C. occipitalis*) suggests the existence of two distinct subspecies rather than four; one of the two included the Tucson shovel-nosed snake and the Colorado Desert shovel-nosed snake. To further explore these results within the context of the petition, we solicited peer review of how species and subspecies, taxonomic classification, and geographical ranges should be determined. The four taxonomists believed that the Tucson subspecies does not warrant taxonomic recognition. However, they were using a criterion for species, not subspecies, and the ESA recognizes conservation concern below the level of species by defining "species" to include subspecies. Two species experts believed there is some agreement between morphological and molecular data, and supported recognition of the Tucson shovel-nosed snake as a unique taxonomic entity. As a result, three of the taxonomists, plus one of the species experts, suggested that nuclear DNA markers or microsatellites be used to determine if the Tucson subspecies is distinct, and if so, where the boundary of the intergrade zone is located. Because of the inconclusive responses from the reviewers, in addition to the suggestion that additional genetic work is needed before determining the status and range of the Tucson shovel-nosed snake, we evaluated the petition using the existing taxonomic classification. If additional genetic analysis reveals that the Tucson shovel-nosed snake is not a valid subspecies, it may result in a different conclusion.

Q: Are there efforts to conserve the Tucson shovel-nosed snake?

A: Three habitat conservation plans are currently being developed within the range of the Tucson shovel-nosed snake: the Pima County Multi-species Conservation Plan, the Town of Marana Habitat Conservation Plan, and the City of Tucson’s Avra Valley Habitat Conservation Plan. As none of these plans have been finalized, we did not explore the adequacies of these plans as possible regulatory mechanisms for the snake.

The Arizona Game and Fish Department limits the take of Tucson shovel-nosed snakes to four animals per person per year (with a valid hunting license). If more than four are to be collected (e.g., for research purposes), a scientific collecting permit must be obtained. It is illegal to commercially sell, barter, or trade any native Arizona wildlife. Encounters between humans and Tucson shovel-nosed snakes can result in the capture, injury, or death of the snake due to the lay person’s fear or dislike of snakes, and its resemblance to venomous coral snakes. We believe that unregulated take may occur, but it is likely infrequent because Tucson shovel-nosed snakes generally are difficult to locate in the wild.

Q: What does “warranted but precluded” mean?

A: The resources (personnel and funding) available for listing actions are determined through the annual Congressional appropriations process. Congress and court orders have, in effect, determined the amount of money available for other listing activities. Therefore, the funds in the Congressional appropriation for listing, other than those needed to address court-mandated critical habitat for already listed species, set the limits on what ESA listing actions can be accomplished in a given year. In a “warranted but precluded” finding, we must show that our ESA listing program is making expeditious progress in listing actions.

In light of this, the Tucson shovel-nosed snake will be added to the federal list of candidate species while the Service works on listing proposals for other species that are at greater risk of extinction. The Service will annually review the Tucson shovel-nosed snake finding until a listing proposal is published, or a “not warranted” finding is made based on new information. Candidate species are assigned a Listing Priority Number (LPN) to prioritize their progress in the listing process based upon their population status, threats and taxonomic uniqueness; LPNs range from 1 (high priority) to 12 (lowest priority). The Tucson shovel-nosed snake was assigned an LPN of 3.

Q: Does adding the Tucson shovel-nosed snake to the list of candidate species provide any conservation benefit?

A: The Tucson shovel-nosed snake will be added to the list of candidate species eligible for Endangered Species Act protection. While candidate species receive no statutory protection under the ESA, inclusion on the candidate list promotes cooperative conservation efforts for these species. The Service’s ultimate goal, which is shared by many state wildlife agencies, private organizations and individuals, is to intervene and successfully address the needs of candidate species so that listing is no longer needed.

For example, the Service provides technical assistance and competitive matching grants to private landowners, states and territories undertaking conservation efforts on behalf of candidate species. The Service also works with interested landowners to develop Candidate Conservation Agreements. These voluntary agreements allow citizens to manage their property in ways that benefit candidate species, in some cases precluding the need to list the species. These agreements can also be developed to provide regulatory certainty for landowners should the species become listed under the ESA.

Addressing the needs of candidate species before the regulatory requirements of the Endangered Species Act come into play often allows greater management flexibility to stabilize or restore these species and their habitats. In addition, as threats are reduced and populations are increased or stabilized, attention can be shifted to those candidate species in greatest need of the ESA’s protective measures.

Q: Will the Fish and Wildlife Service follow up on the status review and precluded listing?

A: Yes, the Service will annually review the finding until a listing proposal is published, or a “not warranted” finding is made based on new information.

Q: How do I submit information for annual status reviews?

A: Information regarding the status of, and any potential threat to, the Tucson shovel-nosed snake may be submitted by mail to Steve Spangle, Field Supervisor, Arizona Ecological Services Office, 2321 West Royal Palm Road, Suite 103, Phoenix, AZ 85021–4951 or by email to Marit Alanen at marit_alanen@fws.gov.