



## **DEPARTMENT OF THE INTERIOR**

### **Fish and Wildlife Service**

#### **50 CFR Part 17**

**[Docket No. FWS–R2–ES–2016–0103; 4500030113]**

**RIN 1018–AZ02**

### **Endangered and Threatened Wildlife and Plants; Endangered Species Status for Sonoyta Mud Turtle**

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Final rule.

**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), list the Sonoyta mud turtle (*Kinosternon sonoriense longifemorale*), a turtle from Arizona in the United States and Sonora in Mexico, as an endangered species under the Endangered Species Act of 1973 (Act), as amended. This rule adds the Sonoyta mud turtle to the Federal List of Endangered and Threatened Wildlife and extends the Act's protections to this subspecies.

**DATES:** This rule is effective [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** This final rule is available on the Internet at <http://www.regulations.gov> and at <http://www.fws.gov/southwest/es/arizona/>. Comments and materials we received, as well as supporting documentation we used in preparing this rule, are available for public inspection at <http://www.regulations.gov>. Comments, materials, and documentation that we considered in this rulemaking will be available by appointment, during normal business hours at: U.S. Fish and Wildlife Service, Arizona Ecological Services Field Office, 9828 North 31st Ave #C3, Phoenix, AZ 85051–2517; telephone

602-242-0210.

**FOR FURTHER INFORMATION CONTACT:** Steve Spangle, Field Supervisor, U.S. Fish and Wildlife Service, Arizona Ecological Services Field Office, 9828 North 31st Ave #C3, Phoenix, AZ 85051-2517; telephone 602-242-0210. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service at 800-877-8339.

**SUPPLEMENTARY INFORMATION:**

**Previous Federal Action**

Please refer to the proposed listing rule for the Sonoyta mud turtle (81 FR 64829; September 21, 2016) for a detailed description of previous Federal actions concerning this subspecies.

**Background**

We completed a comprehensive assessment of the biological status of the Sonoyta mud turtle, and prepared a report of the assessment, which provides a thorough account of the subspecies' overall viability. We define viability as the ability of the subspecies to persist over the long term and avoid extinction. In this section, we summarize the conclusions of that assessment, which can be accessed at Docket No. FWS-R2-ES-2016-0103 on <http://www.regulations.gov> and at <http://www.fws.gov/southwest/es/arizona/>. The Sonoyta mud turtle's Species Status Assessment (SSA Report; Service 2017, chapter 4) contains a detailed discussion of our evaluation of the biological status of the Sonoyta mud turtle and the influences that may affect its continued existence.

To assess Sonoyta mud turtle viability, we used the three conservation biology principles of resiliency, representation, and redundancy (Shaffer and Stein 2000, pp. 306-310). Briefly, resiliency supports the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years); representation supports the ability of the species to adapt over time to long-term changes in the environment (for example, climate changes); and redundancy supports the ability of the species to withstand catastrophic events (for example, droughts). In general, the more redundant, representative, and resilient a species is, the more likely it is to sustain populations over time, even under changing environmental conditions. Using these principles, we identified the Sonoyta mud turtle's ecological requirements for survival and reproduction at the individual, population, and subspecies levels, and described the beneficial and risk factors influencing the subspecies' viability.

We evaluated the change in resiliency, representation, and redundancy from the past until the present, and projected the anticipated future states of these conditions. To forecast the biological condition into the future, we devised plausible future scenarios by using expert information on the primary stressors anticipated in the future to the Sonoyta mud turtle: habitat loss and degradation (i.e., surface water loss and riparian vegetation loss), effects of climate change, and small population dynamics. To assess population resiliency of the Sonoyta mud turtle, we evaluated habitat conditions and recruitment over time. To assess representation (as an indicator of adaptive capacity) of the Sonoyta mud turtle, we evaluated the ecological and genetic diversity and connectivity over time. To assess redundancy, we calculated the risk of population extirpations given the

catastrophic events. That is, we tallied the number of populations historically, currently, and projected into the future to assess the viability of the subspecies.

### *Subspecies Description*

The Sonoyta mud turtle is a freshwater turtle encountered in or near water in an otherwise arid environment that commonly experiences drought and extreme heat (ambient temperatures can exceed 45 degrees Celsius (°C) (113 degrees Fahrenheit (°F))). The Sonoyta mud turtle is one of two recognized subspecies of Sonora mud turtle (*Kinosternon sonoriense*) and has been differentiated from the other subspecies based on shell measurements and DNA analysis (Iverson 1981, p. 62; Rosen 2003, entire; Rosen *et al.* 2006, entire). The other subspecies, *K. s. sonoriense*, is commonly referred to as Sonora mud turtle. The Sonoyta mud turtle is an isolated, native endemic found in southern Arizona and northern Sonora, Mexico. The Sonoyta mud turtle is a dark, medium-sized freshwater turtle with a mottled pattern on the head, neck, and limbs. Average lifespan is from 10 to 12 years; however, one has been reported to be 39 years old.

Minimum age of sexual maturity of female Sonoyta mud turtles is just under 6 years, and males around 4 years (Rosen and Lowe 1996, pp. 14–16). Mating occurs in water from April to late June. Ovulation and shelling of eggs begins in June, and eggs remain in the oviducts until the monsoon rains occur from mid to late July through September (van Loben Sels *et al.* 1997, p. 343). In mid to late July through September, females leave the water briefly to lay eggs in terrestrial nests. Eggs may undergo embryonic diapause (delayed embryo development) in the nest for up to 11 months after being laid. Development begins as eggs warm during the following spring and takes

about 80 days, and hatchlings emerge and disperse from the nest the following year to coincide with the onset of summer rains (van Lobel Sels *et al.* 1997, p. 343; Ernst and Lovich 2009, p. 497; Stone *et al.* 2015, p. 735).

### *Habitat and Range*

The Sonoyta mud turtle is found in southern Arizona and northwestern Mexico and depends on aquatic habitat with adjacent terrestrial habitat. Its habitats commonly experience drought and extreme heat. Historically, the Sonoyta mud turtle was limited in its distribution to the Rio Sonoyta basin in Arizona and Sonora, Mexico. There are five historical records of the subspecies being found within three historical perennial sections of the Rio Sonoyta, including the Sonoyta, Santo Domingo, and Papalote (also referred to as Agua Dulce) reaches (Rosen *et al.* 2010, p. 152), which we assume supported three populations. Perennial waters likely flowed through these three sections of the Rio Sonoyta separated by seasonally ephemeral sections (figure 3.1.1.b of the SSA Report), and groundwater also supported springs and cienegas (wet, marshy areas) in the area (Miller and Fuiman 1987, p. 602; Schoenherr 1988, p. 110; Hendrickson and Varela-Romero 1989, p. 481). These three distinct perennial reaches of the Rio Sonoyta together likely provided 19 to 27 kilometers (km) (12 to 17 miles (mi)) of stream habitat for the Sonoyta mud turtle. The Rio Sonoyta probably flowed for short periods during wet seasons, providing connectivity for mud turtles, with the stream rapidly retracting during the dry season, as it still does today. During periods of above-average precipitation, the river may have been continuous for longer periods, making turtle population connectivity more likely along Rio Sonoyta. We assume that the historical locations of the Sonoyta mud turtles were in areas of the Rio Sonoyta basin that maintained perennial surface

water at all times except, possibly, during rare, protracted drought periods. These locations may no longer have reliable surface water to support mud turtles or sufficient surface water to support as large a population as they used to (Paredes-Aguilar and Rosen 2003, p. 2; Rosen *et al.* 2010, p. 155). Perennial water also existed outside of the Rio Sonoyta in cienegas such as one fed by Quitobaquito Springs on Organ Pipe Cactus National Monument. Quitobaquito Springs is predominately supplied by groundwater (Carruth 1996, pp. 14, 18).

In the SSA Report, we define a population of Sonoyta mud turtles as a group of interbreeding individuals living in an ecological community and separated from other populations by barriers including desert upland (overland, not connected by riparian or xeroriparian habitat) or in-channel distances that lack water most of the time. Currently, five populations of Sonoyta mud turtles occur. Three of these populations are historical populations—Quitobaquito Springs, and the Sonoyta and Papalote reaches of the Rio Sonoyta. However, the Sonoyta reach has now been reduced to a much smaller reach referred to as Xochimilco. There are two new populations—the Sonoyta sewage lagoon and Quitovac in Mexico, which were historically unknown and only discovered in 2002 but likely were present since the 1990s (Knowles *et al.* 2002, p. 74). These two new populations are not connected hydrologically to each other or to the Rio Sonoyta populations and it is likely that humans transplanted turtles from the Rio Sonoyta to these sites. One other historical population is considered extirpated—Santo Domingo. Of the five extant populations, one is in the United States in the pond and channel associated with Quitobaquito Springs in Organ Pipe Cactus National Monument, Arizona. The other four populations are in Sonora, Mexico (Rosen *et al.* 2010, p. 152).

Two populations in the Rio Sonoyta in the Papalote reach and Xochimilco reach are extant, but perennial water flow in these reaches is reduced from historical levels. Since these perennial reaches in the Rio Sonoyta are greatly reduced or gone, the connectivity among these remaining populations is highly unlikely. The other two extant populations are the Sonoyta sewage lagoon and Quitovac in Mexico. Quitovac consists of multiple springs impounded to form a pond. The Sonoyta sewage lagoon site consists of two lagoons of raw sewage. A new wastewater treatment plant has been constructed to replace the Sonoyta sewage lagoons. However, this new plant has yet to begin operating and it is unclear when it will open. The amount of water and riparian vegetation provided at the new plant is less than that provided at the sewage lagoons and only a portion of the Sonoyta mud turtles are likely to be transplanted.

The population at Quitobaquito Springs has been extensively monitored since the early 1980s. Surveys in the Rio Sonoyta basin in Sonora, Mexico, from 2001 through 2006 provide most of our knowledge of the current populations in Mexico (table 3.2.2 of the SSA Report; Paredes-Aguilar and Rosen 2003, entire; Knowles *et al.* 2002, entire; Rosen *et al.* 2010, pp. 152-153). However, we have low confidence that the population sizes for the Sonora populations remain at 2006 levels today, as many changes since the early 2000s have reduced or degraded habitat at most of the sites that still support Sonoyta mud turtles. In October 2001, a single turtle was found in a soup-bowl-sized remnant of water at the semi-perennial spring in the Santo Domingo reach (Santo Domingo is in the Rio Sonoyta and is the location of one of the five historical records of Sonoyta mud turtle listed above; Rosen *et al.* 2010, pp. 152-153), and we now think this

historical population is likely extirpated due to loss of perennial surface water in this reach (Rosen 2016, pers. comm.).

### *Species Needs*

Sonoyta mud turtles depend on aquatic habitat for foraging, shelter, and mating and terrestrial habitat for nesting and estivating. The Sonoyta mud turtle historically occupied habitat in cienegas and streams supported by groundwater-fed springs. Natural aquatic habitats of Sonoyta mud turtles are sustained by groundwater discharged from springs and augmented by seasonal rainfall. Terrestrial habitat that maintains soil moisture needed for Sonoyta mud turtles occurs in riparian areas along the banks of ponds and streams, including intermittently dry sections of a stream channel. However, natural aquatic habitats are highly limited. Sonoyta mud turtles can also be sustained by modified natural habitats or completely human-created habitats that provide similar permanent or almost permanent surface water. Currently, populations still occur within stream habitat, but all the cienegas have been modified from their natural state.

For the Sonoyta mud turtle to maintain viability, its populations, or some portion of its populations, must be resilient enough to withstand stochastic events such as fluctuations in water levels, habitat modification, and introduction of nonnative predators. In the SSA Report, we categorized the potential resiliency of populations of the subspecies. We developed four different resiliency levels: high, medium, low, and none. In a highly resilient Sonoyta mud turtle population, all or the majority of turtles are able to complete their life functions, breeding maintains a stable or increasing population, and the population is able to withstand stochastic events or recover from stochastic events from connected populations. Influencing those factors are elements of Sonoyta mud

turtle habitat that determine whether survivorship among age classes is achieved, thereby increasing the resiliency of populations. These factors include perennial or near perennial water (i.e., 10 to 11 months annually for consecutive years) of sufficient volume and extent with connectivity to other populations, terrestrial riparian habitat with soil moisture, high invertebrate prey abundance, and lack of problem nonnative species. The factors used to develop these resiliency levels are discussed below.

**Table 1. Population Resiliency Categories for Sonoyta Mud Turtle**

<b>High (Good)</b>	<b>Moderate</b>	<b>Low</b>	<b>None</b>
<p>A population with high resiliency is where:</p> <ul style="list-style-type: none"> <li>• All or the majority of turtles are able to complete their life functions;</li> <li>• Breeding is successful to maintain a stable or increasing population;</li> <li>• Population is able to withstand stochastic events or recover from stochastic events from connected populations.</li> </ul>	<p>A population with moderate resiliency is where:</p> <ul style="list-style-type: none"> <li>• Some turtles can complete life functions;</li> <li>• Some turtles have some successful breeding, but population is not increasing;</li> <li>• Population could be stable or decreasing;</li> <li>• Population could withstand some stochastic events or a portion of the population could withstand stochastic events, but population is not able to recover through the immigration of connected populations.</li> </ul>	<p>A population with low resiliency is one where:</p> <ul style="list-style-type: none"> <li>• Some or few turtles can complete life functions;</li> <li>• Some or few turtles have successful breeding, but population is decreasing;</li> <li>• Population is not able to withstand stochastic events, and is not able to recover through the immigration of connected populations.</li> </ul>	<p>A population with no resiliency is one that might be extirpated completely.</p>

### *Surface Water*

Sonoyta mud turtles require perennial or mostly perennial water to complete their life-history functions and avoid desiccation. We define near-perennial as water present more than 10 to 11 months of the year for multiple years. Aquatic habitat in ponds and streams with water 2 meters (m) (6.5 feet (ft)) deep, with a rocky, muddy, or sandy substrate, and emergent or submergent vegetation, or both is needed (NPS 2015, p. 2; Paredes-Aguilar and Rosen 2003, p. 5–7; Rosen 2003, p. 5; Rosen *et al.* 2010, p. 14). Hatchling, juvenile, and sub-adult turtles prefer aquatic habitat with shallow water and dense emergent vegetation and overhanging vegetation along the stream channel or pond margin that provides foraging opportunities as well as protection from predators (Rosen 1986, pp. 14 and 36; Rosen and Lowe 1996, p. 11). Adults will also use shallow water habitat, but prefer aquatic habitat with accessible, deeper, open water (up to 2 m (6.5 ft)) when available, and submerged vegetation for feeding on benthic and plant-crawling invertebrates along the substrate (Rosen 1986, pp. 14, 16; Rosen and Lowe 1996, p. 11). Adults, juveniles, and subadults also use aquatic habitat with structure that provides protection from predators such as root masses, complex rock features, and undercut banks. Turtle recruitment can be affected by the amount of surface water available, how long it is available, as well as its fluctuation. In addition, hydrologic connectivity is needed for a population to recover from a stochastic event.

### *Terrestrial Habitat*

Sonoyta mud turtles need terrestrial habitat that maintains soil moisture for Sonoyta mud turtles in riparian areas along the banks of ponds and streams, including

intermittently dry sections of stream channels. Riparian habitat provides shadier, cooler, and moister conditions than the adjacent upland areas. Sonoyta mud turtles likely need moist soil for nesting to prevent desiccation of eggs and estivation sites to prevent desiccation of juveniles and adults. Riparian vegetation may also provide some level of protection from terrestrial predators while turtles are out of the water. Sonoyta mud turtles further need accessible shoreline without insurmountable rock or artificial vertical barriers to allow for movement between wetted sites, between aquatic habitat and terrestrial nest sites, and between water and estivation sites.

#### *Invertebrate Prey*

Sonoyta mud turtle hatchlings and juveniles need shoreline invertebrate fauna, while subadults and adults need bottom dwelling (i.e. on or in the sediment) and plant-crawling invertebrates. Aquatic habitat with emergent and submerged vegetation or the substrate of ponds and streams is needed to support prey for Sonoyta mud turtles (Rosen 1986, pp. 14, 31; Rosen and Lowe 1996, pp. 32-35). Aquatic invertebrates primarily live on and require a variety of prey such as algae, diatoms, and other microorganisms. In habitats with poor aquatic invertebrate faunas, Sonoyta mud turtles will shift to omnivorous feeding, including plants and vertebrates. When invertebrates are abundant, and competition is low, turtles grow rapidly and have sufficient fat content to support reproduction.

#### *Nonnative Predators and Competitors*

Sonoyta mud turtles need aquatic habitat free of problematic nonnative predators and competitors such as crayfish, American bullfrogs, sunfish, black bullheads, African cichlid fishes (tilapia), western mosquitofish, and exotic turtles. Competition between

nonnative species and mud turtles for food likely results in disruption of the food chain and alteration of the invertebrate community (Taylor *et al.* 1984, pp. 330–331; Fernandez and Rosen 1996, pp. 39–40; Duncan 2013, p. 1). Such competition, in turn, likely decreases the type and amount of aquatic invertebrate prey available to Sonoyta mud turtles (Fernandez and Rosen 1996, pp. 39–40) and leads to lower fitness of turtles.

Sonoyta mud turtles need genetic or ecological diversity to adapt to changing environmental conditions. The more representation, or diversity, a species has, the more it is capable of adapting to changes (natural or human-caused) in its environment. Representation can be measured by the breadth of genetic or environmental diversity within and among populations and gauges the probability that a species is capable of adapting to environmental changes. Currently, the Sonoyta mud turtle exhibits genetic and ecological diversity. Maintaining gene flow among populations and counteracting genetic drift and deleterious effects of inbreeding connectivity among populations are needed. A minimum of 1 and maximum of 10 migrants per generation is needed to successfully breed in populations of a species (Mills and Allendorf 1996, p. 1517; Nathan *et al.* 2017, p. 270; Wang 2004, p. 341). This is a large range of migrants per generation, and we do not know where within this range the Sonoyta mud turtle falls to maintain genetic diversity among the fragmented populations of the subspecies. Genetic analysis conducted in the mid-2000s reveals that successful migration has likely occurred in the past (Rosen 2006, p. 10). Maintaining representation in the form of genetic or ecological diversity is important to maintain the Sonoyta mud turtle's capacity to adapt to future environmental changes.

The Sonoyta mud turtle needs multiple resilient populations spread over its

historical range distributed in such a way that a catastrophic event will not result in the loss of all populations. In addition, hydrologic connectivity is needed for a population to recover from a catastrophic event. We do not have an estimate of how many populations are needed to withstand localized loss of habitat and maintain redundancy. However, the loss of Quitobaquito Springs, Quitovac, and either Rio Sonoyta Papalote or Rio Sonoyta Xochimilco would reduce the representation for the subspecies.

### **Summary of Biological Status and Threats**

The primary negative factor affecting the future viability of the Sonoyta mud turtle is continued loss of water that supports aquatic and riparian habitat. The sources of water loss affecting Sonoyta mud turtles include groundwater pumping, drought, changes to wastewater infrastructure, consumption by livestock, surface water diversion, and habitat manipulation. Of these sources, water loss caused by drought and groundwater pumping, both of which are exacerbated by climate change and changes to wastewater infrastructure, are the primary causes of population-level impacts to the Sonoyta mud turtle. The other sources of water loss are not likely to have population-level impacts unless mining near Quitovac is intensified and unregulated. However, the Quitovac site is routinely dredged, resulting in direct impacts to Sonoyta mud turtles and prey. All of these factors are additive in terms of impacts to populations that are already stressed by the primary activities causing population-level impacts. In addition, impacts from climate change (discussed below) are expected to exacerbate water loss.

Ground water pumping impacts the amount of surface water in areas used by Sonoyta mud turtles because the perennial sections of the Rio Sonoyta as well as the pond at Quitobaquito Springs and Quitovac are supplied by ground water. Diminished

water reduces the amount of space, prey, and cover (from predators and for estivation) available to mud turtles. Reduction in aquatic habitat (i.e., space) leads to crowding and increased competition for limited resources (Stanila 2009, p. 45). Sonoyta mud turtles in dry or low surface water reaches will burrow in channels to escape desiccation for a short period of time. However, the ability of Sonoyta mud turtles to estivate may depend on behavioral cues provided by the level of permanence of water they reside in (Ligon and Stone 2003, p.753; Stanila 2009, p. 45). After time, burrows themselves may become too dry; turtles will lose fat reserves due to lack of foraging opportunity; females may not have viable eggs due to lack of nutrition and fat reserves, thereby reducing reproduction; and eventually turtles will die from either starvation or desiccation. If water is not reliably present all year and absent beyond the dry season, turtles are not able to forage; may not reproduce; and, as drought periods lengthen, may eventually desiccate (Stanila 2009, p. 45).

Sonora mud turtles that live in permanent bodies of water have shown highly aquatic behavior with little terrestrial behavior or movement between water sources, while Sonora mud turtles in more ephemeral habits have been documented moving through or out of dry stream beds to reach wetted pools, for winter hibernation, or for estivation during drought as a drought-survival strategy (Hall and Steidl, 2007, pp. 406–408; Hensley *et al.* 2010, pp. 181–182; Ligon and Stone 2003, pp. 752–753; Stone 2001, pp. 46–51). Prolonged and recurrent estivation is expected to reduce fitness and increase mortality (Peterson and Stone 2000, pp. 692–698). Variation in body size among populations of Sonora mud turtles appears to be related to water permanence, and body size was significantly larger in permanent habitats compared to intermittent and

ephemeral habitats (Stanila 2009, p. 31). In permanent water sites, growth and body size are positively correlated with aquatic invertebrate abundance at a site (Rosen and Lowe 1996, pp. 33, 35).

Reduced surface water and ground water reduce the survival and growth of vegetation in the riparian areas. Reductions in riparian habitat decrease subsurface moisture needed for nesting sites; drought refuge for hatchlings, juvenile, and adult turtles; and shelter from large flooding events for hatchlings, juveniles, and adults. It is likely that only adults will be the most resistant to severe droughts. Decreased riparian vegetation will lead to deterioration of the microclimate that provides soil moisture for nest sites and burrows.

Water permanence may also affect the diversity of aquatic invertebrate prey available for mud turtles, with ephemeral habitats having lower diversity than intermittent or perennial habitats (Stanila 2009, p. 38), in addition to the presence of nonnative aquatic species that compete for prey. When invertebrates are abundant, and competition is low, turtles grow rapidly and have sufficient lipid content to support reproduction. Turtle recruitment is likely driven in significant part by invertebrate prey available because nutritional stress on females may result in a reduction in annual survivorship (Rosen and Lowe 1996, p. 41). Competition from nonnatives could decrease the type and amount of aquatic invertebrate prey available to Sonoyta mud turtles (Fernandez and Rosen 1996, pp. 39–40) and lead to lower fitness of turtles. Because high average annual juvenile survivorship is required for populations of long-lived organisms to maintain population stability (Congdon *et al.* 1993, pp. 831–832; Congdon *et al.* 1994, pp. 405–406), nonnative predators that reduce recruitment in Sonoyta mud turtle populations

likely cause population declines.

The current prognosis of climate change impacts on the Sonoran Desert includes fewer frost days; warmer temperatures; greater water demand by plants, animals, and people; and an increased frequency of extreme weather events (heat waves, droughts, and floods) (Weiss and Overpeck 2005, p. 2074; Archer and Predick 2008, p. 24). Any reductions in annual rainfall, coupled with the hotter temperatures that are projected with very high confidence (and that will alone bring reductions in aquifer inputs due to higher evaporation rates), would have negative effects on aquifers across the Southwest. Virtually any plausible future climate scenario projects longer dry spells between rains, which can have more severe impacts on the landscape, especially in spring and summer (Lenart 2008, entire).

### **Current Condition**

Currently, five known populations of Sonoyta mud turtle remain. The perennial water supporting four of the five turtle extant populations has been reduced, and all five populations are isolated from one another. For the sole population in the United States, discharge from Quitobaquito Springs has diminished by 42 percent over the past 35 years, with 5,500 cubic feet (cf)/day average discharge measured in the period 1981–1992, down to 3,157 cf/day measured from 2005–present (Carruth 1996, pp. 13, 21; Holm 2016, pers. comm.). Thus far, declining spring flow has been associated with less than 30 centimeters (cm) (12 inches (in)) of surface water level decline at the pond, the depth of which ranges from 81 to 94 cm (32 to 37 in). This could indicate that current lower water levels of the pond are also caused by leakage or evapotranspiration, not just reduced spring flow. Excluding young-of-the-year (< 40 mm (1.6 in) carapace length),

population estimates since 1984 ranged from a low of 39 turtles in 2005 to a high of 189 in 2013 with an average annual population estimate of 110 turtles. The population estimate for 2015 was 141 turtles.

In Mexico, the two populations in the Xochimilco and Papalote reaches of the Rio Sonoyta are isolated from one another even more than they used to be historically because the lengths of the perennial reaches have contracted. Added to this, a previously extant population in the Santa Domingo reach that was located between Xochimilco and Papalote reaches is no longer extant due to a complete lack of perennial water. The perennial waters in these three reaches have decreased by 80 to 92 percent from 19–27 km (11.8–16.8 mi) historically to approximately 1.5–5.5 km (0.9–3.4 mi) currently (table 1 and figure 3.1.1 of the SSA Report). Periodic movement between populations in the Rio Sonoyta basin may occur during prolonged periods of high rainfall, but the extent of immigration and emigration of turtles is unknown. However, it is thought to be rare to limited due to distances between populations coupled with limited hydrological connection.

Currently, the status of the Xochimilco population is unknown, but abundance is almost certainly far less, considering the reduced spatial and temporal extent of surface water. A total of 57 turtles have been marked in the Papalote reach in 2017, for a mark-recapture study that will provide better information on the status of the Sonoyta mud turtle in this reach in the next few years.

The population at the Sonoyta sewage lagoon adjacent to the Rio Sonoyta has the most reliable source of water at this time and may be the largest of the five populations based on water availability, but we have no current data on numbers of turtles at this site.

If a new wastewater treatment plant is completed for the town of Sonoyta, the existing Sonoyta sewage lagoons will be drained and the new wastewater treatment plant will have 75 percent less habitat available for Sonoyta mud turtles. The fourth population in Mexico at Quitovac is outside of the Rio Sonoyta watershed, in the Rio Guadalupe basin, and has no present-day hydrological connection to the Rio Sonoyta. In addition, the Quitovac site was just recently completely dredged and the current status of Sonoyta mud turtles at that location is unknown.

### **Future Condition**

The future resiliency of Sonoyta mud turtle populations depends on future water quantity, available riparian habitat, available invertebrate prey, and absence of certain nonnative aquatic species. In addition, if the new wastewater treatment plant becomes operational and replaces the Sonoyta sewage lagoons, this will be a reduction in water and riparian habitat for the Sonoyta mud turtle. Further, only a portion of the Sonoyta mud turtles are likely to be transplanted. Because there is uncertainty regarding how and when surface water loss and associated riparian habitat impairment may occur, as well as if and when various nonnative species may occur, we projected what the effects to the Sonoyta mud turtle may be in terms of population resiliency and species redundancy and representation under three plausible future scenarios over three meaningful time frames: 7 years, 35 years, and 70 years. We chose 7 years based on the area's drought cycle, 35 years because it incorporates both the maximum life span of the species and the mid-century climate projections for the southwestern United States, and 70 years because it is within the range of the available drought and climate change model forecasts and is about

twice the maximum life span of the species (Lenart 2008, entire; Strittholt *et al.* 2012, entire; Garfin *et al.* 2013, entire).

Since surface water availability limits the other elements and the carrying capacity of the site, the ranking of the surface water was weighted higher than the other metrics. This means that if surface water was ranked moderate and all other elements were ranked high, the overall ranking would be moderate. We are presenting the moderate case scenarios, as we have determined that this is the most likely future scenario based on our understanding of the future conditions of climate change and groundwater pumping.

**Table 2. Summary Of Sonoyta Mud Turtle Population Resiliency Under Scenario 2–Moderate Case At Each Time Step Compared To Current Condition**

Country	Population Name	Current Condition	Moderate Case Scenario		
			7-year time step	35-year time step	70-year time step
United States	Quitobaquito Springs	Moderate	Moderate	Moderate	Low
Mexico	Papalote Reach (Agua Dulce)	Moderate	Moderate	None	None
	Sonoyta Sewage Lagoon	Moderate	Low	None	None
	New Sonoyta wastewater treatment plant	None	Moderate	Moderate	Moderate
	Xochimilco Reach (Sonoyta Reach)	Low	Low	None	None
	Quitovac	Low	Low	Low	Low

Santo Domingo	None	None	None	None
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**Summary of Changes from the Proposed Rule**

In preparing this final rule, we reviewed and fully considered comments we received from the public and peer reviewers on the SSA Report and proposed rule. We received numerous comments and new information from peer reviewers on the science and analysis in the SSA Report, and we have updated the SSA Report to incorporate these accordingly. In addition, we met with the National Park Service (NPS) to discuss the SSA Report, and we updated the SSA Report with the information NPS provided. This final rule incorporates minor changes to our proposed listing based on the comments we received, as discussed below in **Summary of Comments and Recommendations**. We received multiple comments from peer reviewers that we underestimated some of the future risks to Sonoyta mud turtle populations. We have reevaluated the viability of the Sonoyta mud turtle in the SSA Report given this new information. These data allowed us to refine our risk assessment; thus, the final results are slightly different from those in the proposed rule. We found the probability of persistence lower than in the proposed rule. The new information we received in response to the proposed rule did not change our determination that the Sonoyta mud turtle is an endangered species, nor was it significant enough to warrant reopening the public comment period on the proposed rule.

**Summary of Comments and Recommendations**

In the proposed rule published on September 21, 2016 (81 FR 64829), we requested that all interested parties submit written comments on the proposal by November 21, 2016. We also contacted appropriate Federal and State agencies, scientific

experts and organizations, and other interested parties and invited them to comment on the proposal. Newspaper notices inviting general public comment were published in the Arizona Daily Star. We did not receive any requests for a public hearing.

We reviewed all comments we received in response to the proposed rule for substantive issues and new information. We did not receive any comments from Federal agencies, States, or Tribes, and the public comments we received only stated a preference for listing or not listing the subspecies without including any substantive comments regarding the sufficiency of our analysis. All substantive information provided by peer reviewers during the comment period has either been incorporated directly into this final determination or is addressed below.

#### *Peer Reviewer Comments*

In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we solicited expert opinion from eight knowledgeable individuals with scientific expertise that included familiarity with the Sonoyta mud turtle and its habitat, biological needs, and threats, or the nominate subspecies Sonora mud turtle. We received responses from six of the peer reviewers.

We reviewed all comments received from the peer reviewers for substantive issues and new information regarding the listing of Sonoyta mud turtle. The peer reviewers generally concurred with our methods and conclusion, and provided additional and pertinent information, clarifications, and suggestions to improve the SSA Report and, therefore, the final rule. Peer reviewer comments are addressed in the following summary and incorporated into the SSA Report and this final rule as appropriate.

(1) *Comment:* One peer reviewer stated that the new wastewater treatment facility is not constructed, nor are there in-place plans to populate it, and there is currently no guarantee that whatever habitat is constructed will actually be suitable.

*Our Response:* We made revisions throughout the SSA Report to acknowledge the uncertainty related to future habitat for the Sonoyta mud turtle at the new wastewater treatment plant in the town of Sonoyta, Sonora, Mexico.

(2) *Comment:* One peer reviewer identified the importance of stipulating that the historical range and populations of the Sonoyta mud turtle are only those that are known or have been documented.

*Our Response:* We acknowledge that these are only the known populations of the Sonoyta mud turtle. While historically there could have been other populations, the best available commercial and scientific information does not indicate any other additional populations.

(3) *Comment:* One peer reviewer stated that he is not convinced that development of Sonoyta mud turtle embryos takes 80 days and is delayed after the eggs are laid, as stated in Ernst and Lovich (2009, p. 497).

*Our Response:* We acknowledge uncertainty regarding the timing of embryo development, or diapause, in the Sonoyta mud turtle. However, these specific steps in the reproductive process are also noted in van Lobel Sels *et al.* (1997, p. 497) and Stone *et al.* (2015, p. 735). The best available commercial and scientific information indicates that diapause likely occurs in this subspecies as it does in the nominate subspecies.

(4) *Comment:* One peer reviewer stated that we are assuming that Sonoyta mud turtles need riparian areas with moist soil.

*Our Response:* We acknowledge uncertainty around the terrestrial habitat needs of the Sonoyta mud turtle. However, we have high confidence that this subspecies uses areas with more shade and increased soil moisture to prevent desiccation of eggs in nest sites and turtles in estivation sites. Without suitable soil moisture, eggs will desiccate, and while the threshold is unknown, at some point the loss of soil moisture will impact egg survival. In the extremely arid environment where the Sonoyta mud turtle exists, riparian areas provide more shade and soil moisture than the surrounding uplands and, therefore, provide better habitat for nests.

(5) *Comment:* One peer reviewer stated that some nonnative aquatic species can be both predator and competitor to the Sonoyta mud turtle, and that not all nonnatives are harmful to the Sonoyta mud turtle.

*Our Response:* In the SSA Report, we clarified that only certain nonnative aquatic species are predators of the Sonoyta mud turtle, and we identify those that are a potential threat. We also clarified that only certain other nonnative aquatic species, as well as native fish species, may compete with Sonoyta mud turtles for invertebrate prey or disrupt the prey food chain. Further, we clarified the effects to the Sonoyta mud turtle from predation and competition from these specific nonnatives.

(6) *Comment:* Multiple peer reviewers thought that our viability projections for the Sonoyta mud turtle in chapter 5 of the SSA Report were overly optimistic based on uncertainty of the current status of populations in Mexico and because we underestimated the threats of introduction of nonnative aquatic species and climate change to the subspecies. Conversely, one peer reviewer thought we overestimated the threat of nonnatives persisting at Quitobaquito Springs because NPS would probably remove the threat.

*Our Response:* We agree that viability projections for the Sonoyta mud turtle were overly optimistic because of the high uncertainty of the number of turtles in the Mexico populations and that we underestimated some of the threats, such as long-term drought, nonnatives, and loss of connectivity, to the Sonoyta mud turtle. We modified the SSA Report accordingly. We also agree that the nonnatives at Quitobaquito Springs have been removed by NPS in the past; however, no mechanism ensures that changing resource priorities and funding constraints will not be an issue in the future. We have modified the SSA Report accordingly.

(7) *Comment:* Several peer reviewers noted that statements in the SSA Report that require citations to support them. For example, one peer reviewer believed that the statement “prolonged and recurrent estivation will reduce fitness and increase mortality” was entirely speculative. Similarly, another peer reviewer indicated the uncertainties acknowledged in the SSA Report reduce its predictive value (e.g., effects of transitioning to the new sewage treatment plant, likelihood of introduction of nonnative species, status of the turtle on Tohono O’odham Nation lands, long-term genetic

viability, and continued ability of State and Federal agencies to manage for this species).

*Our Response:* We revised the SSA Report to add citations to support statements where needed throughout the document. We also recognize that the SSA Report contains uncertainties, and throughout the document we identify these uncertainties as well as quantify or clarify our level of uncertainty. However, because we are required by the Act (16 U.S.C. 1531 et seq.) to complete this determination based on the best available scientific and commercial information, we must move forward without resolving all potential uncertainties.

(8) *Comment:* One peer reviewer noted that the distribution map on page 4, figure 2.1.1., of the SSA Report is a bit out of date. Specifically, the Quitovac locality is not shown, and there are now many more localities in northeastern Sonora (see the Madrean Archipelago Biodiversity Assessment and Madrean Discovery Expeditions databases).

*Our Response:* Figure 2.1.1. in the SSA Report is used to demonstrate the general distribution of the two mud turtle subspecies, Sonora and Sonoyta, in relation to each other, not to delineate the current range or distribution of either subspecies.

### *Public Comments*

We received only comments stating a preference for listing or not listing the subspecies. We did not receive any substantive comments regarding the sufficiency of

the analysis.

## **Determination**

### *Standard for Review*

Section 4 of the Act (16 U.S.C. 1533), and its implementing regulations at 50 CFR part 424, set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants. Under section 4(a)(1) of the Act, we may list a species based on (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; or (E) Other natural or manmade factors affecting its continued existence. Listing actions may be warranted based on any of the above threat factors, singly or in combination.

The fundamental question before the Service is whether the species meets the definition of “endangered species” or “threatened species” under the Act. To make this determination, we evaluated the projections of extinction risk, described in terms of the condition of current and future populations and their distribution (taking into account the risk factors and their effects on those populations). For any species, as population condition declines and distribution shrinks, the species’ extinction risk increases and overall viability declines.

### *Sonoyta Mud Turtle Determination of Status Throughout All of Its Range*

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to the Sonoyta mud turtle. Currently, the five extant populations are all significantly isolated from one another such that recolonization of areas previously extirpated or areas that may be extirpated is extremely unlikely. Expert input provided during the development of the SSA Report indicated that connectivity or movement among the populations is a rare or nonexistent occurrence. The species' range has been reduced by 80 to 92 percent in the Rio Sonoyta (Factor A) in Mexico, and current distribution is limited to five populations in three ponds totaling less than 7 ha (less than 17.5 ac) and two perennial sections of the Rio Sonoyta totaling 1.5 to 5.5 km (0.9 to 3.4 mi). Two historical populations are extirpated due to loss of perennial water. There are two newly discovered extant populations in addition to the three historical populations that remain. One is within a wastewater treatment plant where the impacts from facility management and water quality make monitoring difficult and may be adverse to Sonoyta mud turtle viability, and the other is outside the Rio Sonoyta basin, which is likely outside the historical range of the species. None of the five populations are classified as having "high" resiliency, described in the SSA Report as "all or the majority of turtles are able to complete their life functions and breeding is successful to maintain a stable or increasing population, and able to withstand stochastic events or recover from stochastic events from connected populations." Even with a resiliency classified as "moderate" in three populations, we expect stable or decreasing populations that are not able to recover from stochastic events. The remaining two populations have few turtle able to complete life functions, a decreasing population,

and inability to withstand or recover from stochastic events. All five of these populations are currently facing stressors and are susceptible to current and ongoing impacts.

Habitat loss from anthropogenic ground water withdrawals and long-term drought is occurring rangewide and is likely to continue and increase in the near term (Factors A and E). This reduction in water restricts the limited available habitat and decreases the resiliency of Sonoyta mud turtle populations within those habitats. We find that ongoing cyclical drought is likely to continue and be exacerbated by climate change, further decreasing water availability and increasing evapotranspiration losses (Factors A and E). This threat is ongoing, rangewide, and expected to increase in the future. Predation by nonnative aquatic species has occurred at two sites in Mexico, although there is uncertainty with regard to the population effects (Factor C). Predation by nonnative aquatic species reduces recruitment and population size of populations of Sonora mud turtle, and it is likely to continue to affect Sonoyta mud turtle populations in the future. The Quitovac population's current habitat was just recently completely dredged (Factor A), and the current status of Sonoyta mud turtles at that location is unknown. Partial dredging in the near term is likely to occur based on past dredging activity. It is reasonably likely that a catastrophic event could occur imminently at one or more of the population sites, and current population resiliency and redundancy are inadequate to maintain population viability.

The implementation of the conservation measures by NPS and the Quitobaquito Rio Sonoyta Working Group has resulted in maintaining the only Sonoyta mud turtle population in the United States and reduces the risk of loss of at least one population in Mexico. However, the conservation measures do not alleviate the threats that are

influencing the resiliency, redundancy, and representation of the Sonoyta mud turtle across its range (as described above).

The Act defines a “species” as including any “subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.” The Act defines an “endangered species” as any species that is “in danger of extinction throughout all or a significant portion of its range” and a “threatened species” as any species “that is likely to become endangered throughout all or a significant portion of its range within the foreseeable future.” Based on the information presented in the SSA Report for the Sonoyta mud turtle, and the discussion above, we find that the best available scientific and commercial information indicates that the Sonoyta mud turtle is presently in danger of extinction throughout its entire range based on the severity and immediacy of threats currently impacting the subspecies. The overall range has been significantly reduced; the limited remaining habitat and populations are currently threatened by an increase in ground water pumping, which results in reduced spring flows and, therefore, reduced surface water. Discharge from Quitobaquito Springs has diminished by 42 percent over the past 35 years, and the pond depth has been declining since the early 1990s due to evapotranspiration, leakage, and the reduction in spring water discharge. The perennial waters in the three historical reaches of the Rio Sonoyta have decreased by 80 to 92 percent. Current distribution is limited to five populations in three ponds totaling less than 7 ha (less than 17.5 ac) and two perennial sections of the Rio Sonoyta totaling 1.5 to 5.5 km (0.9 to 3.4 mi). The new wastewater treatment plant, if utilized, will provide 75 percent less habitat available for Sonoyta mud turtles than the current sewage lagoon. Reduced surface water results in

reduced aquatic habitat where the subspecies spends the majority of its time and that is needed to avoid desiccation of all life stages. Further, the reduction in surface water impacts aquatic vegetation used by the Sonoyta mud turtle for cover and by its prey species. Lastly, the reduction in ground water reduces the soil moisture of the riparian area, resulting in habitat that is too dry for Sonoyta mud turtles to use for estivation and nesting.

These factors, acting in combination, reduce the overall viability of the subspecies. Each of the five remaining populations are exposed to threats that may eliminate them individually at any time. The risk of extinction for this subspecies is currently high because the five remaining populations are small, isolated, and have limited (if any) potential for recolonization. Each population's isolation from other populations means that once a population is extirpated, it is likely to remain extirpated. The estimated current conditions of the known Sonoyta mud turtle populations as described in the SSA Report lead us to find that the condition and distribution of populations do not provide sufficient resiliency, redundancy, and representation for this subspecies at this time; therefore, we find that the subspecies meets the definition of an endangered species under the Act. Accordingly, on the basis of the best available scientific and commercial information, we are listing the Sonoyta mud turtle as endangered in accordance with sections 3(6) and 4(a)(1) of the Act.

We find that a threatened status is not appropriate for the Sonoyta mud turtle because the danger of extinction for this subspecies exists now. The current restricted range and ubiquitous and imminent threats occur rangewide. Consequently, we find the Sonoyta mud turtle to be in danger of extinction now throughout its range.

### *Determination of Status Throughout a Significant Portion of Its Range*

The Act defines an endangered species as any species that is “in danger of extinction throughout all or a significant portion of its range” and a threatened species as any species “that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.” The phrase “significant portion of its range” is not defined by the Act, and a district court has held that aspects of the Service’s Final Policy on Interpretation of the Phrase “Significant Portion of Its Range” in the Endangered Species Act’s Definitions of “Endangered Species and “Threatened Species” (79 FR 37577 (July 1, 2014)) (SPR Policy) were not valid. *Center for Biological Diversity v. Jewell*, No. 14-cv-02506-RM (D. Ariz. Mar. 29, 2017) (Pygmy-Owl Decision).

Although the court’s order in that case has not yet gone into effect, if the court denies the pending motion for reconsideration, the SPR Policy would become vacated. Therefore, we have examined the plain language of the Act and court decisions addressing the Service’s application of the SPR phrase in various listing decisions, and for purposes of this rulemaking we are applying the interpretation set out below for the phrase “significant portion of its range” and its context in determining whether or not a species is an endangered species or a threatened species. Because the interpretation we are applying is consistent with the SPR Policy, we summarize herein the bases for our interpretation, and also refer the public to the SPR Policy itself for a more-detailed explanation of our reasons for interpreting the phrase in this way.

An important factor that influences the question of whether an SPR analysis is necessary here is what the consequence would be if the Service were to find that the

Sonoyta mud turtle is in danger of extinction or likely to become so throughout a significant portion of its range. Two district court decisions have evaluated whether the outcomes of the Service's SPR determinations were reasonable. As described in the SPR Policy, both courts found that, once the Service determines that a "species"—which can include a species, subspecies, or DPS under ESA Section 3(16)—meets the definition of "endangered species" or "threatened species," the species must be listed in its entirety and the Act's protections applied consistently to all members of that species (subject to modification of protections through special rules under sections 4(d) and 10(j) of the Act). See *Defenders of Wildlife v. Salazar*, 729 F. Supp. 2d 1207, 1222 (D. Mont. 2010) (delisting of the Northern Rocky Mountains DPS of gray wolf; appeal dismissed as moot because of public law vacating the listing, 2012 U.S. App. LEXIS 26769 (9th Cir. Nov. 7, 2012)); *WildEarth Guardians v. Salazar*, No. 09-00574-PHX-FJM, 2010 U.S. Dist. LEXIS 105253, 15-16 (D. Ariz. Sept. 30, 2010) (Gunnison's prairie dog). The issue has not been addressed by a Federal Court of Appeals.

Consistent with the district court case law, we interpret that the consequence of finding that the Sonoyta mud turtle is in danger of extinction or likely to become so throughout a significant portion of its range would be that the entire species would be listed as an endangered species or threatened species, respectively, and the Act's protections would be applied to all individuals of the species wherever found. Thus, the "throughout all" phrase and the SPR phrase provide two independent bases for listing. We note that in the Act Congress placed the "all" language before the SPR phrase in the definitions of "endangered species" and "threatened species." This suggests that Congress intended that an analysis based on consideration of the entire range should

receive primary focus. Thus, the first step we undertook, above, in our assessment of the status of the species was to determine its status throughout all of its range. Having determined that the species is in danger of extinction throughout all of its range, we now examine whether it is necessary to determine its status throughout a significant portion of its range.

We conclude that in this situation we do not need to conduct an SPR analysis. This conclusion is consistent with the Act because the species is currently in danger of extinction throughout all of its range due either to high-magnitude threats across its range, or to threats that are so high in particular areas that they severely affect the species across its range. Therefore, the species is in danger of extinction throughout every portion of its range, and an analysis of whether the species is in danger of extinction or likely to become so throughout any significant portion of its range would be redundant and unnecessary. We accordingly conclude that we do not need to conduct further analysis of whether the Sonoyta mud turtle is in danger of extinction or likely to become so in the foreseeable future throughout a significant portion of its range.

Therefore, on the basis of the best available scientific and commercial information, we are adding Sonoyta mud turtle to the List of Endangered and Threatened Wildlife as an endangered species in accordance with sections 3(6) and 4(a)(1) of the Act. We find that a threatened species status is not appropriate for Sonoyta mud turtle because of the immediacy of threats facing the species with only five known populations, at least one of which is declining in abundance.

### **Critical Habitat Determination**

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR

424.12), require that, to the maximum extent prudent and determinable, the Secretary shall designate critical habitat at the time the species is determined to be an endangered or threatened species. Our regulations (50 CFR 424.12(a)(1)) state that the designation of critical habitat is not prudent when one or both of the following situations exist:

(1) The species is threatened by taking or other human activity, and identification of critical habitat can be expected to increase the degree of threat to the species, or

(2) Such designation of critical habitat would not be beneficial to the species. In determining whether a designation would not be beneficial, the factors the Service may consider include but are not limited to: Whether the present or threatened destruction, modification, or curtailment of a species' habitat or range is not a threat to the species, or whether any areas meet the definition of "critical habitat."

#### *Prudence of Critical Habitat*

There is currently no imminent threat of take attributed to collection or vandalism identified under Factor B for this subspecies, and identification and mapping of critical habitat is not expected to initiate any such threat. In the absence of finding that the designation of critical habitat would increase threats to a species, we next determine whether such designation of critical habitat would not be beneficial to the species. In our proposed listing rule, we determined that there are habitat-based threats to the Sonoyta mud turtle identified under Factor A. Therefore, we find that the designation of critical habitat would be beneficial to Sonoyta mud turtle through the provisions of section 7 of the Act. Because we have determined that the designation of critical habitat will not likely increase the degree of threat to the subspecies and would be beneficial, we find that designation of critical habitat is prudent for the Sonoyta mud turtle.

### *Critical Habitat Determinability*

Having determined that designation is prudent, under section 4(a)(3) of the Act, we must find whether critical habitat for the Sonoyta mud turtle is determinable. Our regulations at 50 CFR 424.12(a)(2) state that critical habitat is not determinable when one or both of the following situations exist:

(i) Information sufficient to perform required analysis of the impacts of the designation is lacking, or

(ii) The biological needs of the species are not sufficiently well known to identify any area that meets the definition of “critical habitat.”

As required by section 4(b)(2) of the Act, we use the best scientific data available to designate critical habitat after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. In accordance with the Act and our implementing regulations at 50 CFR 424.12(b), we review available information pertaining to the habitat requirements of the species and identify specific areas within the geographical area occupied by the species at the time of listing and any specific areas outside the geographical area occupied by the species to be considered for designation as critical habitat. A careful assessment of the economic impacts that may occur due to a critical habitat designation is still ongoing, and we are in the process of working with Customs and Border Protection and the National Park Service in acquiring the necessary information needed to perform that assessment. The information sufficient to perform a required analysis of the impacts of the designation is lacking. Accordingly, we find that critical habitat for this subspecies, in accordance with section 4(a)(3)(A) of the Act, to be not determinable at this time. When

critical habitat is not determinable, the Act allows the Service an additional year to publish a critical habitat designation (16 U.S.C. 1533(b)(6)(C)(ii)).

### **Available Conservation Measures**

Conservation measures provided to species listed as endangered or threatened species under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness, and conservation by Federal, State, Tribal, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and requires that recovery actions be carried out for all listed species. The protection required by Federal agencies and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Subsection 4(f) of the Act requires the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

Recovery planning includes the development of a recovery outline shortly after a species is listed and preparation of a draft and final recovery plan. The recovery outline

guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery plan identifies site-specific management actions that set a trigger for review of the five factors that control whether a species remains endangered or may be downlisted or delisted, and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available on our website (<http://www.fws.gov/endangered>) or from our Arizona Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (e.g., restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands.

Following publication of this final listing rule, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and

cost share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the State of Arizona will be eligible for Federal funds to implement management actions that promote the protection or recovery of the Sonoyta mud turtle. Information on our grant programs that are available to aid species recovery can be found at: <http://www.fws.gov/grants>.

Please let us know if you are interested in participating in recovery efforts for the Sonoyta mud turtle. Additionally, we invite you to submit any new information on this subspecies whenever it becomes available and any information you may have for recovery planning purposes (see **FOR FURTHER INFORMATION CONTACT**).

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is listed as an endangered or threatened species and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of any endangered or threatened species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with the Service.

Federal agency actions within the subspecies' habitat that may require conference or consultation or both as described in the preceding paragraph include management and any other landscape-altering activities on Federal lands administered by NPS (Organ Pipe Cactus National Monument) and U.S. Customs and Border Protection.

The Act and its implementing regulations set forth a series of general prohibitions

and exceptions that apply to endangered wildlife. The prohibitions of section 9(a)(1) of the Act, codified at 50 CFR 17.21, make it illegal for any person subject to the jurisdiction of the United States to take (which includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or to attempt any of these) endangered wildlife within the United States or on the high seas. In addition, it is unlawful to import; export; deliver, receive, carry, transport, or ship in interstate or foreign commerce in the course of commercial activity; or sell or offer for sale in interstate or foreign commerce any listed species. It is also illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions apply to employees of the Service, the National Marine Fisheries Service, other Federal land management agencies, and State conservation agencies.

We may issue permits to carry out otherwise prohibited activities involving endangered wildlife under certain circumstances. Regulations governing permits are codified at 50 CFR 17.22. With regard to endangered wildlife, a permit may be issued for the following purposes: for scientific purposes, to enhance the propagation or survival of the species, and for incidental take in connection with otherwise lawful activities. There are also certain statutory exemptions from the prohibitions, which are set forth at sections 9 and 10 of the Act.

It is our policy, as published in the **Federal Register** on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a final listing on proposed and ongoing activities within the range of a listed species. At this time, we are

unable to identify specific activities that would not be considered to result in a violation of section 9 of the Act because the Sonoyta mud turtle sites where the species currently occurs are subject to a variety of potential activities, and it is likely that site-specific conservation measures may be needed for activities that may directly or indirectly affect the species. Based on the best available information, the following actions are likely to result in a violation of section 9; this list is not comprehensive:

(1) Unauthorized handling or collecting of the Sonoyta mud turtle.

(2) Destruction/alteration of Sonoyta mud turtle habitat by discharge of fill material, draining, ditching, tiling, pond construction, stream channelization or diversion, removal or destruction of emergent aquatic vegetation; or diversion or alteration of surface or ground water flow into or out of the wetland (*i.e.*, due to roads, impoundments, discharge pipes, storm water detention basins, etc.) or in any body of water in which the Sonoyta mud turtle is known to occur.

(3) Direct or indirect destruction of riparian habitat.

(4) Introduction of nonnative species that compete with or prey upon the Sonoyta mud turtle, such as the introduction of nonnative fish and crayfish species.

(5) Release of biological control agents that attack any life stage of this subspecies.

(6) Discharge of chemicals or fill material into any waters in which the Sonoyta mud turtle is known to occur.

Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the Arizona Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

## **Required Determinations**

### *National Environmental Policy Act (42 U.S.C. 4321 et seq.)*

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*), need not be prepared in connection with listing a species as an endangered or threatened species under the Endangered Species Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

### *Government-to-Government Relationship With Tribes*

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to tribes.

Based on cultural claims maps and reservation boundaries we have on file, the distribution of the Sonoyta mud turtle overlaps areas that may be of interest to the following tribes: Tohono O'odham Nation, Quechan Tribe, Hopi Tribe, Colorado River

Indian Tribes, and Cocopah Indian Tribe. On November 20, 2015, we notified these tribes via letter of our intent to conduct a status assessment for the purpose of determining whether the subspecies warrants protection under the Act. In our letter, we offered to meet with the tribe to discuss the process, potential impacts to the tribes, and how tribal information may be used in our assessment. In addition, we requested any information they have regarding the subspecies. On August 17, 2016, we invited comments from the five tribes, and on September 19, 2016, we submitted notification to tribal leaders of the proposed listing publication. To date, we have not received a response from these any of these tribes. Upon publication of this final rule, we will send notification letters to these tribes and again extend an invitation to meet and discuss.

### **References Cited**

A complete list of references cited in this rulemaking is available in the SSA Report (U.S. Fish and Wildlife Service 2017. Species status assessment report for the Sonoyta mud turtle (*Kinosternon sonoriense longifemorale*), Version 2.0. Albuquerque, NM) that is available on the Internet at <http://www.regulations.gov> at Docket Number FWS-R2-ES-2016-0103, at <https://www.fws.gov/southwest/es/arizona/>, and upon request from the Arizona Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

### **Authors**

The primary authors of this final rule are the staff members of the Arizona Ecological Services Field Office.

### **List of Subjects in 50 CFR Part 17**

Endangered and threatened species, Exports, Imports, Reporting and

recordkeeping requirements, Transportation.

**Regulation Promulgation**

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as follows:

**PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS**

1. The authority citation for part 17 continues to read as follows:

**Authority:** 16 U.S.C. 1361–1407; 1531–1544; 4201–4245, unless otherwise noted.

2. In §17.11(h), add an entry for “Turtle, Sonoyta mud” to the List of Endangered and Threatened Wildlife in alphabetical order under REPTILES to read as set forth below:

**§ 17.11 Endangered and threatened wildlife.**

\* \* \* \* \*

(h) \* \* \*

Common name	Scientific name	Where listed	Status	Listing citations and applicable rules
* * * * *				
REPTILES				
* * * * *				
Turtle, Sonoyta mud	<i>Kinosternon sonoriense longifemorale</i>	Wherever found	E	82 FR [insert <b>Federal Register</b> page where the document begins], [Insert date of publication in the <b>Federal Register</b> ].
* * * * *				

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Dated: \_\_\_\_\_ **September 7, 2017** \_\_\_\_\_

Signed: \_\_\_\_\_ James W. Kurth \_\_\_\_\_

Acting Director, U.S. Fish and Wildlife Service.

Billing Code 4333-15

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