



Arizona toad

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SCIENTIFIC NAME: *Bufo microscaphus microscaphus*. From the Latin *Bufo*, meaning toad, and the Greek *micro* and *scaph*, meaning small spade, in reference to the small spades on the hind feet.

DESCRIPTION: Arizona toads belong to the family of true toads, Bufonidae. True toads are distinguished from other families of frogs and toads by having parotoid glands, paired glandular bumps behind the eyes. The shape of these glands varies from oval to round. Arizona toads are small to medium-sized (two to three and one-quarter inches from snout to rump) and can be distinguished from Arizona's other true toads by the light stripe across the head including the eyelids, a light area in the lower back, and the lack of a stripe down the middle of the back. Cranial crests, bony ridges between the eyes, are weak or absent. The parotoid glands are oval, and paler toward the front. Dorsal coloration can be greenish-gray, buff, brown, or salmon, and usually matches the local soils and rocks; coloration below is buff. The feet are yellow underneath. Sexes appear similar as adults; the most apparent difference between the sexes is the darkened, swollen thumb pads that males develop when breeding. Young Arizona toads are ash-white, light olive, or salmon with red-tipped warts above.

HABITAT: Arizona toads prefer habitat surrounding intermittent or permanent flowing water with rocky or sandy substrates, from deserts (300 feet elevation) to pine-oak belt (up to 7000 feet elevation). These habitats typically have well-developed riparian vegetation. Artificial habitats such as irrigation ditches or canals are also used.

DISTRIBUTION: It was previously thought that the distribution of this toad



consisted of a series of isolated populations from the Mogollon Plateau of southwestern New Mexico westerly to the Virgin River basin of southern Nevada, southwestern Utah and northwestern Arizona. However, recent work indicates populations are continuously distributed within this same geographic range.

BIOLOGY: The breeding season for Arizona toads begins in February, when air temperature may be a chilly 45 Fahrenheit. Males begin calling after dark in loosely arranged, linear choruses along a stream bank. Their breeding season is independent of rainfall, and they may breed several times a year. Like all toads, the eggs of Arizona toads look like strings of beads. When they hatch, the tadpoles feed on algae, decomposing organic debris, plankton, and bacteria. Upon metamorphosis (the change from tadpole to the terrestrial form), adult Arizona toads feed on a variety of invertebrates, including crickets, beetles, bugs, and moths.

Along with the wondrous process of metamorphosis (in which the entire body plan of the herbivorous tadpole is reorganized into a carnivorous adult in a matter of days!), the call of frogs and toads has been the subject of a great deal of research. Biologists who study the pattern and process of evolution have used these calls to study how species isolating mechanisms, or circumstances which prevent different species from breeding with one another, evolve and are maintained. Through many years of study they have found that

the inner ear of female toads is tuned to a narrow species-typical frequency, therefore, they respond best to calls of male toads of their own species. However, mistakes do occur, and one threat to Arizona toads is hybridization with the Woodhouse toad.

STATUS: The Arizona toad is currently listed by U.S. Fish and Wildlife Service as a Category 2 candidate for listing, meaning there is insufficient biological information to support a proposal to add the species to the threatened or endangered list but there is sufficient concern for the species' status to warrant further study. It is not listed on the Department's 1988 Threatened Native Wildlife in Arizona.

MANAGEMENT NEEDS: Threats to Arizona toads include habitat loss due to degradation of riparian areas from overgrazing and channel cutting, and genetic swamping from their more adaptable cousins, Woodhouse toads. Genetic mixing naturally occurs at low levels wherever closely related species come into contact, and is usually not a problem. However, changes brought about by humans may greatly increase the encounter rate between these species. Under these circumstances, a more common species may "genetically swallow up" a less common species. The less common Arizona toads are stream breeders, while the abundant Woodhouse toads are pond breeders. The damming of streams has attracted Woodhouse toads to habitat which was historically Arizona toad habitat. While the magnitude of this threat remains unclear, one natural experiment will soon be taking place when the level of Lake Pleasant increases due to the New Waddell Dam. In addition to monitoring the changes that will occur in Lake Pleasant, continued surveys in appropriate habitat and changes in human use of riparian areas would help ensure the continued existence of this unique toad in Arizona. 🐸