ARIZONA GAME AND FISH DEPARTMENT
HERITAGE DATA MANAGEMENT SYSTEM

Animal Abstract **Element Code:** AAABF02010
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CLASSIFICATION, NOMENCLATURE, DESCRIPTION, RANGE

NAME: *Spea bombifrons* (Cope, 1863)
COMMON NAME: Plains spadefoot, Plains spadefoot toad, Cope's spea, Central Plains spadefoot, Central Plains spadefoot toad, Spadefoot of the Western Plains
SYNONYMS: *Scaphiopus bombifrons* Cope, *Scaphiopus hammondi bombifrons* Cope
FAMILY: Salentia: Pelobatidae

AUTHOR, PLACE OF PUBLICATION: *Spea bombifrons* Cope, J. Acad. Nat. Sci. Philadelphia, Ser. 2, 6: 81. 1866. *Scaphiopus bombifrons* Cope, Pro. Acad. Nat. Sci. Philadelphia, Vol 15, Pp 53. 1863.

TYPE LOCALITY: Fort Union (Fort Williams) on Missouri River, North Dakota, USA.

TYPE SPECIMEN: Syntypes: USNM 3704 (Fort Union), 3520 (Platte River), 3703 Llano Estacado Texas).

TAXONOMIC UNIQUENESS: Species *bombifrons* is 1 of 4 in the genus *Spea*, all of which are found in North America, and 1 of 3 found in Arizona. The other species of *Spea* found in Arizona include *S. intermontana* (Great Basin Spadefoot) and *S. multiplicata* (Mexican Spadefoot). The genus *Spea* was originally part of the genus *Scaphiopus*, however, it has been widely accepted that *Spea* is a separate genus, although some still argue against the recognition of *Spea* as a separate genus. Within our range, this species will at times hybridize with *Spea multiplicata*. Recently, there has been evidence found that the genera *Spea* and *Scaphiopus* constitute a separate family (Scaphiopodidae) rather than being grouped in the same family as the Eurasian spadefoots (*Pelobates*) in the family Pelobatidae (NatureServe 2005).

DESCRIPTION: A stout-bodied toad with a round- to wedge-shaped black spade on hind feet and a prominent bony hump (=boss) between the eyes. Toads are 1.25 - 2.5 in (3.2 - 6.4 cm) snout to vent. Pupils are vertical, and an external eardrum is apparent. There is no paratoid gland. The skin is predominantly smooth with few to many small tubercles. The dorsal coloration is generally brown to gray, but may also have a greenish tone, whereas the ventral surface is white with no markings. There are also 4 light stripes that run down the back and can form an hourglass shape in the middle of the back. The throat in males is bluish-gray on the sides. The larvae are medium sized with a clear tail fin of medium height. They are usually tan or brown with the eyes positioned dorsally, and reach a total length of about 1.6 - 1.9 (4.0 – 4.8 cm).

AIDS TO IDENTIFICATION: A stout-bodied gray to brown toad with green cast and orange to yellow-tipped tubercles. Vertical pupils and the presence of a spade-like tubercle on each of the hind feet distinguish the spadefoots from the true toads in our range. The pulse rate of the call is faster than *Spea multiplicata*. Both *S. multiplicata* and *Scaphiopus couchii* (Couch's Spadefoot) has no boss (hump) between the eyes. In addition, *Scaphiopus couchii* is greenish-yellow with dark mottling and has a sickle shaped spade rather than a wedge shaped spade. The boss of *Spea intermontana* is more glandular and fleshy, and the spade is longer and narrower.

ILLUSTRATIONS: Color drawing (Stebbins 1966: plate 8)
Color drawing (Stebbins 2003: plate 12)
Color photo (Behler and King 1979: plate 231)
Color photos (Hoberg and Jundt *In*: http://www.npwrc.usgs.gov/narcam/idguide/speab.htm)
Color photos and call (Flath and Messer *In*: http://fwp.state.mt.us/fieldguide/mediaDisplay.aspx?id=2734&elcode=AAABF02010)
Color photos (*In*: http://ndis.nrel.colostate.edu/herpatlas/coherpatlas/)
Color photos (Enderson *In*: http://www.arts.arizona.edu/herp/SPBO.html)

TOTAL RANGE: Southern Alberta and southwestern Saskatchewan (Canada), southward through Montana, North Dakota, and Nebraska and eastern Colorado to southeastern Utah, eastern Arizona to central Missouri, Oklahoma, and western Texas (USA), to Chihuahua and Tamaulipas (Mexico). (Frost, 1998-2004). Isolated populations in extreme southern Texas.

RANGE WITHIN ARIZONA: The species has been documented in Cochise, Coconino, Apache, Navajo, and Graham counties, but may also be found in Greenlee County. In the southeast corner of the state around the Chiricahua Mountains, and also in the northeast corner of the state, from north of Springerville into Utah.

SPECIES BIOLOGY AND POPULATION TRENDS

BIOLOGY: The call is a brief snore that can carry up to 3 km (Lauzon 1999). It has also been described as a dissonant grating note given at 1 second intervals, or a hoarse trill lasting 1 second. The species uses the spade-like tubercles on the hind feet to burrow into the ground where it spends much of the year. "Burrows may be a few inches to several feet long. They remain open but are difficult to locate in sandy soil. Occasionally, sticky matter is seen at the entrance, probably to cement soil in place and prevent burrow collapse." (Behler and King, 1979). It is most active during and following the summer rains when it emerges from its underground burrows to feed and to breed (Brennan 2003). The species is typically nocturnal, although it may be active in the day during breeding. This species migrates up to several hundred meters between breeding pools and non-breeding terrestrial habitats.

Larvae may be the normal herbivorous morphs or larger predaceous morphs with larger and sharper beaks, enlarged jaw muscles, and modified denticles. The predaceous morphs may even be cannibalistic. Predaceous larvae seem to be a response to intense competition, and develop more quickly, thereby providing an advantage in drought years (Duellman and Trueb 1986; and Zug 1993). Development of the predaceous morphs may be induced by feeding live fairy shrimp to regular morphs (Brennan 2003). The larvae may move in schools, particularly when in the presence of certain predators, including cannibalistic conspecific larvae and hydrophilid beetle larvae (Duellman and Trueb 1986).

REPRODUCTION: Breeds in temporary summer pools, ponds, and small lakes during summer rains (May-August). Breeding may last for only a couple of days, with the majority of the breeding occurring during the first night (Degenhardt et al. 1996). Females lay 2,000-2,500 eggs in clusters of 50-250 eggs. The clusters are laid as spherical masses and are attached to submerged vegetation. The eggs hatch within 48 hours, and the larvae generally take 36-40 days to transform, but may transform as quickly as 13 days. Temperatures under 10º Celsius and over 34º Celsius are lethal to the eggs (Lauzon 1999). The summer rains are very important to the species breeding behavior. The summer rains induce the breeding season, and breeding may not occur in years with poor conditions, however, years with exceptional conditions can result in more than one breeding event (Lauzon 1999).

FOOD HABITS: Adults eat caterpillars, moths, and other small arthropods; Tadpoles are omnivorous, usually suspension feeders, but sometimes are cannibalistic.

HABITAT: In Arizona, desert-grassland, low shrubland, and plains grassland to above 6,000 feet. Generally, they prefer areas with sandy, gravely, or sandy loam soils in open country.

ELEVATION: To 6,000 feet (1,830 m). Based on unpublished records in the HDMS, elevation is from 4,100-4,150 feet (1250-1265 m), (AGFD, accessed 2005).

PLANT COMMUNITY: Desert grassland, low shrubland, and plains grassland.

POPULATION TRENDS: According to NatureServe (2005), the total global populations size is unknown but surely exceeds 100,000 and may exceed 1,000,000. They are likely relatively stable in extent of occurrence, unknown level of decline in population size, area of occurrence, and number/condition of occurrences. This species is very resistant to climate changes and modifications of the original habitats.

SPECIES PROTECTION AND CONSERVATION

ENDANGERED SPECIES ACT STATUS: None
STATE STATUS: None
OTHER STATUS: None

MANAGEMENT FACTORS: Busy highways, urban development and large, wide rivers act as separation barriers for this species. Other factors that may have an impact on this species are: habitat destruction, cattle, herbicides, pesticides, and oil and gas activity.

PROTECTIVE MEASURES TAKEN: Arizona fishing license required to take any amphibian.

SUGGESTED PROJECTS: Distribution, habitat, population and life history studies.

LAND MANAGEMENT/OWNERSHIP: State Land Department; Private.

SOURCES OF FURTHER INFORMATION

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