

DEPARTMENT OF THE INTERIOR**Fish and Wildlife Service****50 CFR Part 17**

RIN 1018-AI79

Endangered and Threatened Wildlife and Plants; Delisting of *Agave arizonica* (Arizona agave) From the Federal List of Endangered and Threatened Wildlife and Plants**AGENCY:** Fish and Wildlife Service, Interior.**ACTION:** Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), under the Endangered Species Act of 1973, as amended (Act), have determined that it is appropriate to remove *Agave arizonica* (Arizona agave) from the Federal List of Endangered and Threatened Wildlife and Plants. This determination is based on a thorough review of all available data, which indicate that this plant is not a discrete taxonomic entity and does not meet the definition of a species under the Act. Evidence collected subsequent to the listing indicates that plants attributed to *Agave arizonica* do not constitute a distinct species but rather are individuals that have resulted from recent and sporadic instances of hybridization between two species. Current taxonomic practice is not to recognize such groups of individuals as a species. Since *Agave arizonica* is not recognized as a species, it no longer qualifies for protection under the Act.

DATES: This rule is effective July 19, 2006.

ADDRESSES: Supporting documentation for this rulemaking is available for public inspection, by appointment, during normal business hours at the Arizona Ecological Services Field Office of the U.S. Fish and Wildlife Service, 2321 West Royal Palm Road, Suite 103, Phoenix, Arizona 85021-4951.

FOR FURTHER INFORMATION CONTACT: Mima Falk, U.S. Fish and Wildlife Service, located in the Arizona Ecological Services Tucson Sub-office, 201 North Bonita Avenue, Suite 141, Tucson, Arizona 85745 (telephone 520/670-6150 ext. 225; facsimile 520/670-6154).

SUPPLEMENTARY INFORMATION:**Background**

Agave arizonica, a member of the agave family, was first discovered by J.H. Houzenga, M.J. Hazelett, and J.H. Weber in the New River Mountains of Arizona. Drs. H.S. Gentry and J.H.

Weber described this species in the "Cactus and Succulent Journal" in 1970 (Gentry and Weber 1970). This perennial succulent has leaves growing from the base in a small basal rosette (i.e., an arrangement of leaves radiating from a crown or center), and is approximately 20–35 centimeters (cm) (8–14 inches (in)) high and 30–40 cm (12–16 in) wide. The leaves are dark green with a reddish-brown to light gray border extending nearly to the base, approximately 13–31 cm (5–12 in) long and 2–3 cm (1 in) wide. The slender, branched flowering stalk is 2.5–4 meters (m) (8.2–13 feet (ft)) tall with urn-shaped flowers 25–32 millimeters (mm) (1 in) long (Hodgson 1999). Some plants, including *Agave arizonica*, are able to produce copies of themselves without sexual reproduction. These copies (clones) may remain physically connected to the original plant (vegetative offsets) or may be physically separate plants.

Agave arizonica is found on open slopes in chaparral or juniper grassland in Gila, Maricopa, and Yavapai counties between 1,100–1,750 m (3,600–5,800 ft) in elevation. The plants are often found associated with native junipers (*Juniperus* spp.), mountain mahogany (*Cercocarpus montanus*), *Opuntia* spp., sotol (*Nolina microcarpa*), and banana yucca (*Yucca baccata*), among other species common to the chaparral/juniper-oak transition (Hodgson and DeLamater 1988). There are estimated to be fewer than 100 plants in the wild, occurring mainly on the Tonto National Forest and a few locations on private property. *Agave arizonica* plants are associated with shallow, cobbled, and gravelly soils on strongly sloping to very steep slopes and rock outcrops on mid-elevation hills and mountains. The soils are well-drained and derived from a variety of rocks, including granite, gneiss, rhyolite, andesite, ruffs, limestone, sandstone, and basalt (Hodgson and DeLamater 1988). Plants typically flower from May to July.

Field studies on *Agave arizonica* began in 1983. A natural distribution study was not finalized until August 1984 (DeLamater 1984), after the final listing rule (49 FR 21055, May 18, 1984) was published. Surveys for this study were conducted in the New River Mountains, and by 1984, ten new clones were found in these mountains. These were individual clones of 2–5 rosettes. All of the clones occurred together with two other agaves, *Agave toumeyana* ssp. *bella* and *A. chrysantha*, neither of which is considered rare. *A. chrysantha* is found in southern and eastern Yavapai County, through much of Gila and Maricopa counties, northern and

eastern Pinal County, and northeastern Pima County. *Agave toumeyana* ssp. *bella* is restricted to the eastern slope of the Bradshaw Mountains in eastern Yavapai to northwestern and central to southern Gila County, and northeastern Maricopa to northern Pinal County.

A comparison of plant characters showed *Agave arizonica* to be intermediate to the other two agave species with which it is always found in association (DeLamater and Hodgson 1986). Pinkava and Baker (1985) suggested that plants recognized as *Agave arizonica* may be the result of continuing production of hybrid individuals rather than a distinct species, based on observations that hybrid individuals are found only where the ranges of the putative parents overlap; they are found only in random, widely scattered locations of individual plants and clones; their putative parents have overlapping flowering periods; *Agave arizonica*'s morphological characters are intermediate between the putative parents; and, they appeared to be subfertile (reduced fertilization), producing pollen with a low percent of stainability (a measure of pollen viability). *Agave arizonica* has the same chromosome count ((2n) of 60) as both of its parents which allows for continued reproduction with its parents (backcrossing). Polyploidy (a genetic variation wherein an individual plant has more than the two normal sets of homologous chromosomes) is one factor in determining if a hybrid between two species can become genetically stable. This condition is not present in the genetic constitution of *Agave arizonica*.

Survey work continued in areas that supported populations of the two parent species. These surveys resulted in the discovery of two clones in the Sierra Ancha Mountains, 100 miles disjunct from the New River Mountain locations. To date, plants and clones have been identified in three areas on the Tonto National Forest (New River Mountains, Sierra Ancha Mountains, and the Humboldt Mountains). The New River population is the most numerous, located 17.94 kilometers (km) (10.7 miles (mi)) west-northwest of the Sierra Ancha population. Only one individual was found in the Sierra Ancha Mountains (Träbold 2001). The Humboldt Mountains support a population of Arizona agave, as well as another agave hybrid. This different hybrid agave is produced from a cross between *A. toumeyana* ssp. *toumeyana* and *A. chrysantha* (Pinkava and Baker 1985). That hybrid is a triploid (3n=90), and therefore has a different chromosome count than *Agave arizonica*.

The Desert Botanical Garden (DBG), in Phoenix, initiated ecological studies of *Agave arizonica* in the mid-1980s through 1994. They conducted numerous surveys on the Tonto National Forest, collected seeds *in situ* (in the natural or original environment), conducted experimental crosses *in situ* and *ex situ* (in an artificial environment), and started an *ex situ* collection. DBG's work has shown that *Agave arizonica* can produce viable seed. In 1985, three different crosses were performed on clone #52, *in situ*, using flowers from different panicles (flower stalks). One cross used frozen pollen collected from *Agave arizonica* at the DBG, the second cross was self-fertilization of clone #52, and the third cross was uncontrolled outcrossing of clone #52 (flowers were left open to be pollinated by various donors). Seed was collected from all three crosses. Cross #1 produced 250 seeds, cross #2 produced 20 seeds, and cross #3 produced a large quantity of seeds (Hodgson and DeLamater 1988). Outcrossing with *Agave arizonica* pollen (Cross #1) produced a high proportion of viable seed, as did uncontrolled outcrossing (Cross #3), while self-fertilization (Cross #2) produced a poor seed set. The majority of the seeds were planted. Ten months after planting, 10 of the 105 seeds produced from cross #1 germinated. Some of those resembled *Agave arizonica*, while others did not (W. Hodgson, Desert Botanical Garden, pers. comm. 2003). DBG also conducted controlled crosses of *A. chrysantha* and *A. toumeyana* ssp. *bella*. The seeds produced from this cross resulted in *Agave arizonica* plants. Individual *Agave arizonica* plants can therefore be created by crosses of the parental species. These results support the hypothesis that *Agave arizonica* is composed of individuals that resulted from recent and spontaneous instances of hybridization between two species, and is not, at this time, a species of hybrid origin.

Agave arizonica is most likely a first-generation (F1) hybrid between two other species. It is not known if any individuals of the F1 generation, *in situ*, have backcrossed with either one of the parents or with another *Agave arizonica* individual. The latter seems unlikely given the low numbers of individuals and the great distance separating them. Seeds have been produced in the wild, but it is not known if those seeds were produced from crosses of *Agave arizonica* and either parent species or *Agave arizonica* and *Agave arizonica*. Seeds grown out in greenhouse conditions produced plants with wide

phenotypic (visible) variations; not all seedlings presented 'pure' *Agave arizonica* traits. The fact that *Agave arizonica* can be reliably produced by crossing the putative parents *ex situ* lends support to the hypothesis that *Agave arizonica* is a recurring F1 hybrid. All evidence supports that *Agave arizonica* individuals are derived from crosses between different species. In other words, each individual *Agave arizonica* was created spontaneously and independently from separate crossings of the putative parental species (M. Baker, pers. comm. 2004).

Agave arizonica plants are rare in the wild. The likelihood is low that two of these plants would breed with one another because it is unlikely that two such plants would be close enough to one another and bloom in the same year. Clones still attached or near to the parent plant may produce flowers at the same time, but spatially separated clones may not all bloom at the same time. The flowering period of *Agave arizonica* overlaps with that of its putative parents, and the same insects (bumblebees, mining bees of the family Halictidae, and solitary bees) visit all three agave species. This condition can lead to back-crosses with one of the putative parents. *Agave arizonica* is not likely to maintain a separate genetic identity due to low numbers, overlap of flowering period with the putative parents, and lack of an effective reproductive isolating mechanism to promote genetic stability.

In 1999, Hodgson published a treatment for the *Agave* family for the "Flora of Arizona" (Hodgson 1999). *Agave arizonica* was not recognized as a species in that treatment, which indicated that it should be referred to as *Agave arizonica*, a hybrid of recent origin involving *A. chrysantha* and *A. toumeyana* var. *bella*.

Jolly (in Riesberg 1991) has suggested protection for a hybrid taxon if (1) its evolution has gone past the point where it can be reproduced through crossing of its putative parents, (2) it is taxonomically distinct from its parents, and (3) it is sufficiently rare or imperiled. Under these criteria, F1 hybrids such as *Agave arizonica* should receive no protection because it is still backcrossing with its parents and is not taxonomically distinct.

In summary, the plant species formerly referred to as *Agave arizonica* is now recognized as an interspecific hybrid produced sporadically and spontaneously by the cross of *Agave chrysantha* and *Agave toumeyana* var. *bella*. Individuals have been determined to be hybrids for the following reasons: (1) They share the same chromosome

number (2n=60) with the putative parents, indicating that there are no chromosomal barriers (i.e., reproductive isolating mechanisms) in place to facilitate genetic stability, (2) flowering periods of the putative parents overlap, (3) morphological characters of *Agave arizonica* are intermediate with those of the putative parents, (4) *Agave arizonica* only occurs where there is overlap with the putative parents, (5) it appears to be subfertile, producing pollen with low percent stainability, (6) *Agave arizonica* can be created, *ex situ*, by crossing the putative parents, indicating that there may be no unique genetic characters associated with these plants, and (7) it has not, to our knowledge, reproduced sexually in the field.

Previous Federal Action

Federal Government action concerning *Agave arizonica* began with section 12 of the Act, which directed the Secretary of the Smithsonian Institution to prepare a report on those plants considered to be endangered, threatened, or extinct. This report (House Document No. 94-51), which included *Agave arizonica*, was presented to Congress on January 9, 1975, and accepted by the Service under section 4(c)(2), now section 4(b)(3)(A), of the Act as a petition to list these species. The report, along with a statement of our intention to review the status of the plant taxa, was published in the **Federal Register** on July 1, 1975 (40 FR 27823). On June 16, 1976, we published a proposed rule in the **Federal Register** (41 FR 24523) to determine approximately 1,700 vascular plants to be endangered pursuant to section 4 of the Act. *Agave arizonica* was included in this proposal. On December 10, 1979, we withdrew all outstanding proposals not finalized within two years of their first publication, as required by the 1978 amendments to the Act. On August 26, 1980, the Service received a status report prepared by four researchers employed by the Museum of Northern Arizona. This report documented the status of, and threats to, the species. On December 5, 1980, we published a revised notice for plants (45 FR 82479) and included *Agave arizonica* in category 1. Category 1 was comprised of taxa for which we had sufficient biological information to support their being listed as endangered or threatened species. We published a proposed rule to list *Agave arizonica* as an endangered species on May 20, 1983 (48 FR 22757). No critical habitat was proposed. The final rule listing *Agave arizonica* as endangered was published on May 18,

1984 (49 FR 21055), and no critical habitat was designated.

In 1985, a year after *Agave arizonica* was listed, the U.S. Department of Agriculture Forest Service petitioned us to delist *Agave arizonica* because of its hybrid status. We sent out the work on *Agave arizonica* that had been published for peer review and solicited comments. Many of the comments supported delisting based on the available evidence; however, the Service disagreed that the available data conclusively proved that *Agave arizonica* was a hybrid. The Service believed that the results of the controlled crosses were important for the analysis, and those had not been completed at the time of the review. Therefore, on January 21, 1987 (52 FR 2239), we announced that delisting was not warranted.

We published a proposed rule to remove *Agave arizonica* from the Federal List of Endangered and Threatened Plants on January 11, 2005 (70 FR 1858), based on additional information indicating that *Agave arizonica* is a hybrid and does not meet the definition of a species as defined by the Act.

Summary of Comments and Recommendations

In the January 11, 2005, proposed rule (70 FR 1858) and associated notifications, we invited all interested parties to submit comments or information that might contribute to the final delisting determination for this species. The public comment period ended March 14, 2005. We contacted and sent announcements of the proposed rule to appropriate Federal and State agencies, county governments, scientific organizations, and other interested parties. In addition, we solicited formal scientific peer review of the proposal in accordance with our July 1, 1994, Interagency Cooperative Policy for Peer Review in Endangered Species Act Activities (59 FR 34270). We requested five individuals with expertise in one or several fields, including familiarity with the species, familiarity with the geographic region in which the species occurs, and familiarity with the principles of taxonomy, to review the proposed rule by the close of the comment period. We received comments from six parties, including three designated peer reviewers. All three of the responding peer reviewers, the U.S. Department of Agriculture Forest Service, and one public commenter agreed with our assessment that the scientific evidence presented in our proposed rule supports the hybrid status of *Agave arizonica*

and, therefore, the plant does not merit protection under the Act. The comments are addressed in the following summary. We did not receive any requests for a public hearing.

Issue: We are too hasty in our proposal to delist *Agave arizonica* because hybrids can often succeed in combining genes in new ways to become successful breeding populations, leading to new species formation.

Our Response: Many vascular plants are of hybrid origin, and we acknowledge that hybrids play an important role in speciation. Current evidence does not support the view that *Agave arizonica* is a successful breeding population. We based our delisting decision upon the best available scientific and commercial information. After a review of all available data, we have made the determination that *Agave arizonica* does not meet the definition of a species under the Act. If new information becomes available that shows *Agave arizonica* is exhibiting characteristics of a species (i.e., reproductive isolation from the parent species and ability to reproduce sexually and maintain a degree of genetic stability), we will reexamine the threats to determine if it should be listed again.

Delisting Analysis

After a review of all information available, we are removing *Agave arizonica* from the List of Endangered and Threatened Plants, 50 CFR 17.12. Section 4(a)(1) of the Act and regulations (50 CFR part 424) issued to implement the listing provisions of the Act set forth the procedures for adding species to or removing them from Federal lists. The regulations at 50 CFR 424.11(d) state that a species may be delisted if (1) it becomes extinct, (2) it recovers, or (3) the original classification data were in error. Since the time of listing, additional study has shown that *Agave arizonica* is not a distinct species, but consists of individuals that are the result of spontaneous, occasional, and continuing hybridization between two other distinct species. Individual hybrid plants are produced within populations of the parental species, but their production is random. In modern taxonomic practice, such groups of individuals are not recognized as species. We have concluded that the original taxonomic interpretation upon which the listing decision was based has not been substantiated by subsequent studies, and *Agave arizonica* does not qualify for protection because

it does not fit the definition of a species under the Act.

The term “species,” as defined in the Act, includes any subspecies of fish or wildlife or plants, and any distinct population segment of any species or vertebrate fish or wildlife which interbreeds when mature. *Agave arizonica* does not meet this definition because it is not known to interbreed *in situ* or otherwise reproduce itself. Hybrid origin of species is considered common within the flowering plants (Grant 1963), and some species of hybrid origin are capable of reproducing themselves and maintaining a degree of genetic stability. However, scientific evidence at this point supports the determination that *Agave arizonica* does not have these characteristics of a species. The plants are not known to have sexually reproduced *in situ*. *Agave arizonica* plants have sporadically developed *in situ* from the putative parents, but have not been reproductively self-sustaining. *Agave arizonica* has never been found in well-developed populations or outside patches of its putative parents.

We have carefully assessed the best scientific and commercial information available regarding the conclusion that *Agave arizonica* is not a species, and therefore does not qualify for protection under the Act. We, therefore, conclude that *Agave arizonica* no longer warrants listing under the Act.

Effects of the Rule

This action removes *Agave arizonica* from the List of Endangered and Threatened Plants. The prohibitions and conservation measures provided by the Act no longer apply to this species. Therefore, interstate commerce, import, and export of *Agave arizonica* are no longer prohibited under the Act. In addition, Federal agencies no longer are required to consult with us to insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of *Agave arizonica*. The plant is still protected by Arizona's Native Plant Law, A.R.S., Chapter 7, Section 3–901, which specifically prohibits collection except for scientific or educational purposes under permit. There is no designated critical habitat for this species.

Future Conservation Measures

The 1988 amendments to the Act require that all species delisted due to recovery be monitored for at least five years following delisting. *Agave arizonica* is being removed from the List of Endangered and Threatened Plants because the taxonomic interpretation that it is a species is no longer believed

to be correct; *Agave arizonica* is a sporadically occurring hybrid, rather than a distinct taxon. Therefore, no monitoring period following delisting is required.

National Environmental Policy Act

We have determined that an Environmental Assessment or an Environmental Impact Statement, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

Paperwork Reduction Act

Office of Management and Budget (OMB) regulations at 5 CFR part 1320 implement provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*). The OMB regulations at 5 CFR 1320.3(c) define a collection of information as the obtaining of information by or for an agency by means of identical questions posed to, or identical reporting, recordkeeping, or disclosure requirements imposed on, 10 or more persons. Furthermore, 5 CFR 1320.3(c)(4) specifies that "ten or more persons" refers to the persons to whom a collection of information is addressed by the agency within any 12-month period. For purposes of this definition, employees of the Federal Government are not included. The Service may not conduct or sponsor, and you are not required to respond to, a collection of information unless it displays a currently valid OMB control number.

This rule does not include any collections of information that require approval by OMB under the Paperwork Reduction Act. The *Agave arizonica* is being delisted because the taxonomic interpretation that it is a species is no longer believed to be correct; *Agave arizonica* is a sporadically occurring hybrid, rather than a distinct taxon. Therefore, no monitoring period following delisting would be required, and we do not anticipate a need to request data or other information from 10 or more persons during any 12-month period in order to satisfy monitoring information needs. If it becomes necessary to collect information from 10 or more non-Federal individuals, groups, or organizations per year, we will first obtain information collection approval from OMB.

Executive Order 13211

On May 18, 2001, the President issued Executive Order 13211 on regulations that significantly affect energy supply, distribution, and use. Executive Order 13211 requires agencies to prepare Statements of Energy Effects when undertaking certain actions. As this final rule is not expected to significantly affect energy supplies, distribution, or use, this action is not a significant energy action and no Statement of Energy Effects is required.

References Cited

- DeLamater, R. 1984. Natural distribution and status of *Agave arizonica* Gentry and Weber in Arizona with accompanying maps. Prepared for USDA Forest Service Range Management, Albuquerque, NM. 11 pp.
- DeLamater, R. and W. Hodgson. 1986. *Agave arizonica*: An endangered species, a hybrid, or does it matter? Proceedings of a California Native Plant Society Conference. Sacramento, CA.
- Gentry, H.S. and J.H. Weber. 1970. Two New Agaves in Arizona. *Cactus and Succulent Journal*. 42(5): 223–228.
- Grant, V. 1963. The Origin of Adaptations. Columbia University Press, New York. 606 pp.
- Hodgson, W. and R. DeLamater. 1988. *Agave arizonica* Gentry and Weber; Summary of status and report on recent studies. Desert Botanical Gardens, Phoenix, AZ. U.S.D.I., U.S. Fish and Wildlife Service, Albuquerque, NM. 11 pp.
- Hodgson, W. 1999. Vascular plants of Arizona: Agavaceae. *Journal of Arizona-Nevada Academy of Science* 32(1): 1–21.
- Pinkava, D.J. and M.A. Baker. 1985. Chromosome and hybridization studies of agaves. *Desert Plants*. 7(2): 93–100.
- Riesberg, L.H. 1991. Hybridization in rare plants: insights from case studies in *Cercocarpus* and *Helianthus*. In *Genetics and conservation of rare plants*. Donald A. Falk and K.E. Holsinger (Eds). Oxford University Press, New York. 283 pp.
- Träbold, P.A. 2001. Re-establishment—*Agave arizonica*. M.S. thesis. California State University, Fullerton, CA. 65 pp.

Authors

The primary authors of this document are staff located at the Arizona Ecological Services Tucson Sub-office (see **FOR FURTHER INFORMATION CONTACT** section).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

■ Accordingly, we hereby amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

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

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Public Law 99–625, 100 Stat. 3500; unless otherwise noted.

§ 17.12 [Amended]

■ 2. Amend § 17.12(h) by removing the entry "*Agave arizonica*" under "FLOWERING PLANTS" from the List of Endangered and Threatened Plants.

Dated: May 19, 2006.

Kenneth Stansell,

Acting Director, Fish and Wildlife Service.

[FR Doc. E6–8643 Filed 6–16–06; 8:45 am]

BILLING CODE 4310–55–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 622

[I.D. 060806E]

Fisheries of the Caribbean, Gulf of Mexico, and South Atlantic; Reef Fish Fishery of the Gulf of Mexico; Closure of the 2006 Deep-Water Grouper Commercial Fishery

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Temporary rule; closure.

SUMMARY: NMFS closes the commercial fishery for deep-water grouper (misty grouper, snowy grouper, yellowedge grouper, warsaw grouper, and speckled hind) in the exclusive economic zone (EEZ) of the Gulf of Mexico. NMFS has determined that the deep-water grouper quota for the commercial fishery will have been reached by June 26, 2006. This closure is necessary to protect the deep-water grouper resource.

DATES: Closure is effective 12:01 a.m., local time, June 27, 2006, until 12:01 a.m., local time, on January 1, 2007.

FOR FURTHER INFORMATION CONTACT: Jason Rueter, telephone 727–824–5350, fax 727–824–5308, e-mail Jason.Rueter@noaa.gov.

SUPPLEMENTARY INFORMATION: The reef fish fishery of the Gulf of Mexico is managed under the Fishery Management Plan for the Reef Fish Resources of the Gulf of Mexico (FMP). The FMP was prepared by the Gulf of Mexico Fishery Management Council and is implemented under the authority of the Magnuson-Stevens Fishery