DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Final Rule To Determine Astragalus montil (Heliotrope milkvetch) To Be Threatened Species, With Designation of Critical Habitat

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

plant Astragalus montii (Heliotrope milk-vetch) to be a threatened species and designates critical habitat for a portion of its range under the authority of the Endangered Species Act of 1973, as amended. Astragalus montii is known from three populations entirely on public land in the Manti-LaSal National Forest located in Sanpete and

SUMMARY: The Service determines the

Sevier Counties in central Utah. The taxon grows on outcrop barrens formed from a substrate of partially

decomposed limestone of the Flagstaff

Formation. Astragalus montii populations are in an area of active oil and gas exploration associated with the "Overthrust Belt" of the western United States.

Energy exploration and any development could have a seriously negative effect on this taxon if it were not considered early in developmental planning. This rule extends the protection provided by the Endangered Species Act to A. montii to ensure that such planning will adequately consider the taxon's conservation.

EFFECTIVE DATE: The effective date of this rule is December 7, 1987.

ADDRESSES: The complete file for this rule is available for inspection, by appointment, during usual business hours of the Service's Endangered Species Staff, 134 Union Boulevard, 4th floor, Lakewood, Colorado, and 2078 Administration Building, 1745 West 1700 South, Salt Lake City, Utah 84104.

FOR FURTHER INFORMATION CONTACT: Dr. James L. Miller, at the Lakewood address above (303/234-4600 or FTS 234-2496), or John L. England, at the Salt Lake City address above (801/524-4430 or FTS 588-4430).

SUPPLEMENTARY INFORMATION:

Background

Astragalus montii was first discovered by Mont Lewis and Robert Thompson in July, 1976. Dr. S.L. Welsh recognized it as a species new to science and named it in Lewis' honor in 1978. It has also been recognized as a variety of Astragalus limnocharis (Isely, 1983), but the Service considers it to be a distinct species. Astragalus montii is a herbaceous perennial of the pea family (Fabaceae) and is 1/3-2 inches (1-5 centimeters) tall, with pink-purple, white-tipped flowers, and mottled bladdery-inflated pods. Astragalus montii is a narrow endemic, restricted to outcrops of limestone barrens of only limited extent at or near timberline on top of the Wasatch Plateau of central Utah.

The Wasatch Plateau is in the Utah Plateaus section of the Intermountain region. Some 40 plant taxa are endemic to the Utah Plateaus, and several of these occur as related pairs of taxa, such as the rare and more northern A. montii and its somewhat more plentiful and southern counterpart, A. limnocharis (Cronquist et al., 1972, p. 106; Reveal, 1979, p. 65; Isely, 1983). Silene petersonii var. petersonii is an endemic plant under review for listing that occurs in part in the critical habitat and other range of the Heliotrope milkvetch.

Astragalus montii is known from three populations, all entirely on public land in the Manti-LaSal National Forest. The best known and smallest population occurs on the western portion of Heliotrope Mountain in Sanpete County. This population on about 57 1/2 acres is divided between two sites approximately 1/3 mile apart. The larger site, with about 2,000 individuals, occurs on the south side near the top of Heliotrope Mountain and the smaller site, with fewer than 500 individuals, occurs on the north side. The second population also occurs on Heliotrope Mountain (near its confluence with. sometimes considered a part of, Ferron Mountain), about 2 miles east of the previously mentioned population. This population was discovered in the summer of 1983 and consists of about 4.000 individuals on 37 acres. The third population, also of about 4,000 individuals, occurs about 6 miles south of Heliotrope Mountain on White Mountain, in Sevier County, This population was discovered in 1982, and occurs on isolated rocky outcrops scattered within a total of about 290 acres along the rather flat expanse of the mountain top. No other populations have been located.

Populations of A. montii are in a general area of active oil and gas exploration associated with the "Overthrust Belt" of the western United States. Oil and gas exploration and development in the area where this species occurs, unless conducted with consideration for this taxon, could have a seriously negative effect on its survival. In November, 1982, the Bureau of Land Management (BLM) issued an oil and gas lease covering the thenproposed critical habitat for the taxon, with a stipulation that endangered and threatened species must be accommodated. An oil and gas lease that includes portions of the other Heliotrope Mountain (Ferron Mountain) population does not contain such a stipulation, but this lease was terminated by the lessee in September of 1984.

On December 15, 1980, the Service published a notice of review for plants in the Federal Register (45 FR 82479-82569) that included A. montii as a candidate for listing. On January 13, 1981, the Service published in the Federal Register (46 FR 3187-3191) a rule that proposed A. montii to be an endangered species, with critical habitat proposed for the only population then known, on the south side of western Heliotrope Mountain.

Two additional populations and one additional site were discovered in 1982 and 1983 on the limited rocky outcrops

to which this species is restricted. The distribution and numbers of plants in the populations have been investigated, and the nature, magnitude, and immediacy of threats facing this taxon have been subsequently reevaluated. On August 26, 1983, the Service published a notice in the Federal Register (48 FR 38860-38861) that reopened the comment period through September 14, 1983, and announced a September 12, 1983, public hearing on the proposal, indicating that the Service then considered the taxon threatened rather than endangered. The taxon is considered threatened rather than endangered because of the change in known distribution and in perceived threats, as explained below.

Summary of Comments and Recommendations

In the January 13, 1981, proposed rule (46 FR 3187) and associated notifications, all interested parties were requested to submit factual reports or information that might contribute to the development of a final rule. Appropriate State agencies, county governments, Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. A letter was sent to the Governor of Utah on February 10, 1981, notifying him of the proposed rule for A. montii. In February, 1981, letters were sent to members of Utah's congressional delegation, Federal agencies, local governments and other interested parties notifying them of the proposal and soliciting their comments and suggestions. The proposed rule also announced that a public meeting would be held on February 18, 1981. The meeting was by error scheduled to be held in Nephi, Utah, which is not in the county in which the plant was known to occur. In order to have the meeting take place in the same area in which the proposed critical habitat is located (as the Act then required), the Service announced in the February, 1981, Endangered Species Technical Bulletin and planned to announce in the Federal Register that the public meeting would be held in Manti, Utah, on March 18, 1981. However, due to objection to the proposal as discussed below, the Service postponed the public meeting until it could reconcile the concerns of those opposed to the proposed rule. Written comments received during the period January 13, 1981, through April 14, 1981, concerning the proposed rule are discussed below.

Comments were received from the Governor of Utah, Congressman James Hansen, the Forest Service, and Dr. Stanley L. Welsh, of Brigham Young University. A total of five written responses were received relating to the proposal. All five objected to the proposal itself or to the scientific and conservation rationale upon which the proposal was based. The Forest Service, in two separate but essentially identical responses, objected to the proposed rule. Its objection was based on the following three reasons: (1) "Listing the plant and designating Critical Habitat would tend to draw attention to it and could lead to its endangerment * * *," (2) "The statements in the Federal Register regarding threats to the plant from domestic sheep and off-road vehicle use in the area are not supported with factual evidence * * *," and (3) "The species is listed as "sensitive" by the Regional Forester and is, therefore, afforded the necessary priority to protect it from threats * * *." Dr. S.L. Welsh's objections were the same as those expressed by the Forest Service in points 1 and 2 above. The Governor's objections were a reiteration of the objections noted above. Congressman Hansen's objections again were the same as those above, plus strongly expressed concern of excessive government regulation and interference that he believed would result from the rule. The Service's reply to these comments follows.

There is no evidence of botanical or horticultural interest in the taxon that would lead one to expect an additional threat to Astragalus montii from plant or seed collectors as a result of listing and designating critical habitat. Subsequent field work on A. montii has indeed failed to support statements in the proposed rule concerning threats to this taxon from off-road vehicle (ORV) use and livestock grazing and trampling. The Service recognizes the importance and utility of the Forest Service's sensitive species policy in conserving rare species. However, the Service is not authorized to delegate its legal responsibility for the identification of vulnerable species to any other agency. Finally, the Service neither anticipates that planning for A. montii will cause irresolvable conflict with oil and gas exploration or development, nor that this final rule will result in excessive regulation.

In the August 26, 1983, Federal Register notice (48 FR 38860) that reopened the comment period through September 14, 1983, and in associated correspondence, all interested parties were again requested to submit factual reports or information that might contribute to the development of a final rule. The same groups notified of the 1981 proposal were contacted and

requested to comment. A letter was sent to the Governor of Utah on August 31, 1983, again notifying him of the proposed rule for A. montii. In August and September 1983, letters were again sent to members of Utah's congressional delegation, Federal agencies, local governments and other interested parties notifying them of the proposal and soliciting their comments and suggestions. A newspaper notice that invited general public comment was published in the Manti Messenger on September 1, 1983. The notice also announced that a public hearing would be held on the proposal in Manti, Utah, on September 12, 1983. All comments received during the period from August 26, 1983, through September 21, 1983, are discussed below, as well as a comment from the Governor received November 4. 1983.

Three written comments were received. The Forest Service, in a comment from the Regional Forester, recommended against officially listing A. montii as either threatened or endangered. The Forest Service comment maintained that populations of A, montii appear stable under current land management conditions. The Forest Service also expressed confidence that it could direct any threat to A. montii away from its habitat. The Governor referred to his March, 1981, comment letter and reaffirmed his objection to listing the taxon. He indicated his belief that grazing is not a threat and that the authority of the Forest Service is sufficient protection from any grazing or ORV threats. He stated that discovery in 1982 of the White Mountain population, which is not threatened by grazing or ORV activity, further supports his recommendation not to list the taxon. He did not mention the eastern Heliotrope Mountain (Ferron Mountain) population or address the threat to the Heliotrope populations from energy exploration or development. Dr. Stanley L. Welsh of Brigham Young University commented on the rarity of A montii, its very limited distribution, and its susceptibility to habitat destruction from energy development. He urged protection for this taxon under the Endangered Species Act to ensure its long-term survival. No substantive comments were received at the public meeting held on September 12, 1983, although there was informal discussion on the recently discovered eastern Heliotrope Mountain (Ferron Mountain) population.

The U.S. Fish and Wildlife Service recognizes and values the conservation efforts of the Forest Service in conserving wildlife and plants in

general, and A, montii in particular. Biological evidence suggests that Astragalus montii is vulnerable to localized habitat alteration and, given the potential for further energy exploration in its restricted habitat and the fact that energy exploration is taking place in the vicinity of its proposed critical habitat and elsewhere on Heliotrope Mountain, it fits the criteria of the Act for listing as a threatened species. Since the protective stipulation on the BLM lease that includes the area of critical habitat is restricted to proposed or listed endangered and threatened species, listing is necessary to ensure that the stipulation has effect. It is anticipated that the listing of A montii as threatened will not limit any action or land use plan the Forest Service currently has in operation in the area in which this taxon occurs, and listing will carry out the intent of the BLM lease stipulation.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that Astragalus montii should be classified as a threatened species. Procedures found at Section 4(a)(1) of the Endangered Species Act (16 U.S.C. 1531 et seq.) and regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act were followed. A taxon may be determined to be an endangered or threatened species due to one or more of the five factors described in that section. These factors and their application to Astragalus montii Welsh (Heliotrope milk-vetch) are as follows:

A. The present or threatened destruction, modification, or curtailment of its habitat or range. Astragalus montii occurs in a general area of active petroleum exploration associated with the "Overthrust Belt" of the western United States, indicating a potential that oil and gas could be found there. Given the very limited distribution of A. montii, habitat disturbance as a consequence of oil and gas exploratory drilling or production that did not plan for this taxon could have a seriously negative impact on its survival. On November 1, 1982, the BLM issued an oil and gas lease that includes the area proposed as critical habitat for the taxon, but included a stipulation that could restrict or disallow use of the lease if the exploration or drilling "* * * operation may detrimentally affect an endangered or threatened species * * *." The stipulation indicated that "The Federal surface management

agency [i.e., the Forest Service] is responsible for assuring that the area to be disturbed is examined, prior to undertaking any surface-disturbing activities * * *." Listing Astragalus montii is necessary for this stipulation to aid the taxon. Recreational ORV activity in the area is now thought to be uncommon and not harmful to the taxon.

B. Overutilization for commercial, recreational, scientific, or educational

purposes. None known.

C. Disease or predation. Limited sheep grazing under a management plan occurs in the habitat of A. montii. Actual detrimental impacts to this plant resulting from grazing or associated trampling have not been observed. The plateau tops were more intensely grazed in the past, but Forest Service policy in recent years has reduced grazing in the area to a level believed compatible with conservation of Astragalus montii.

D. The inadequacy of existing regulatory mechanisms. No State laws or regulations currently protect A. montii. The Forest Service has established a national policy, based on the National Forest Management Act, of protecting species that it has designated as "sensitive" (Title 2600, Chapter 2670.3(2); 36 CFR 261.9). The Forest Service has designated A. montii as a sensitive species, and as such it is the policy of the Forest Service to provide for its conservation. The Forest Service has developed a management plan for A. montii and has initiated inventories and studies to develop necessary conservation for it.

The Endangered Species Act of 1973, as amended, and in particular its interagency cooperation regulations under section 7, will provide the necessary regulatory base to sustain the Forest Service in its national sensitive species policy on behalf of A. montii. Listing also is necessary to maintain in effect the BLM lease stipulation for this threatened species on western Heliotrope Mountain, and to require further consideration for the taxon by the BLM in its other lease stipulations. The Act will also add the authority and resources of the U.S. Fish and Wildlife Service in providing for the continued conservation of this taxon as long as it remains listed as threatened.

E. Other natural or manmade factors affecting its continued existence. The harshness of the alpine environment (short growing season, intense sunlight, extremely variable temperatures, etc.) contributes to the fragility of the ecosystem of A. montii. Disturbances may have catastrophic and as yet unknown long-term consequences to such a narrow endemic occupying these alpine habitats.

The careful assessment of the best scientific and commercial information available, as well as the best assessment of the past, present, and future threats faced by this taxon were considered in determining to make this rule final. Based on this evaluation, the preferred action is to list Astragalus montii as a threatened species. Listing as endangered, as proposed, is no longer appropriate, because it has been found to have a somewhat wider distribution and greater number of populations and individuals than had been believed at the time of proposal. It is prudent to designate critical habitat for it, since no threats are anticipated from delineating its location, as discussed above in the response to comments.

Critical Habitat

Critical habitat, as defined by section 3 of the Act and at 50 CFR Part 424 means: (i) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection, and (ii) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Section 4(a)(3) of the Act requires that critical habitat be designated to the maximum extent prudent and determinable concurrent with the determination that a species is endangered or threatened. Critical habitat is designated for A. montii to include the western population on Heliotrope Mountain in Sanpete County, Utah, about 15 miles southeast of Manti on top of the Wasatch Plateau. This area is revised from that proposed, based on field work undertaken in the past few years, and now includes the entire western Heliotrope Mountain population. Acreage is decreased from about 80 to about 65 acres, and the boundaries are redrawn based on most recent knowledge of the species' occurrence in this area. The habitat is characterized by low, barren knolls with very shallow soils derived from partially decomposed white limestone of the Flagstaff Formation. The east Heliotrope (Ferron) Mountain and White Mountain populations were unknown when the proposed rule was published. These additional areas are nevertheless considered necessary habitat for the taxon's survival. These additional areas may be proposed as critical habitat for this plant at some future time Although

these additional areas are not being designated as critical habitat at this time, the listing of the Heliotrope milkvetch provides protection for all individuals of this taxon, whether or not they are within the designated critical habitat.

Section 4(b)(8) requires, for any final regulation that designates critical habitat, a brief description and evaluation of those activities (public and private) that may adversely modify such habitat or may be affected by such designation. Activities within the proposed critical habitat were identified to include grazing of sheep and off-road vehicle touring. However, additional information collected after publication of the proposal indicated that ORV recreation within or in the vicinity of the proposed critical habitat is considered uncommon and is not expected to affect or be affected by the critical habitat designation. Oil and gas leasing, cattle grazing, and hunting also occur within or in the vicinity of the critical habitat. Surface disturbance associated with potential oil and gas exploration or development represents the greatest potential threat to this taxon. The area designated as critical habitat for this plant is one of the locations covered by the BLM lease stipulation already requiring consideration of proposed and listed endangered and threatened species. Designation of the area as critical habitat does not additionally affect the lease stipulation other than to reinforce the importance of the area. Section 4(b)(2) of the Act requires the Service to consider economic and other impacts of designating a particular area as critical habitat. The Service has evaluated the designation in light of all information obtained. The proposed critical habitat designation for the Heliotrope milk-vetch consisted of about 80 acres of limestone barrens near the timberline of Heliotrope Mountain. The proposed critical habitat is located on Federal land administered by the Forest Service within the Manti-LaSal National Forest in Sanpete County, Utah. The boundaries of the critical habitat have been adjusted from about 80 acres of Federal land to about 65 acres of Federal land by removing about 52.5 acres of the area originally proposed and adding about 37.5 acres of limestone barrens directly adjacent to the proposed critical habitat. This adjustment is based on an evaluation of additional information about the location of the species and the constituent elements necessary for the conservation of the species. The critical habitat designation in the final rule consists of limestone barrens near the

timberline within about 65 acres of Federal land on the Heliotrope Mountain in the Manti-LaSal National Forest, Sanpete County, Utah. No. significant economic or other impacts are expected to result from the critical habitat designation for the Heliotrope milk-vetch. This conclusion is based on the following: (1) Forest Service's current management of the portion of Manti-LaSal National Forest that contains the proposed critical habitat areas; (2) the absence of the submission of plans of operations for development of oil and gas leases; (3) the unknown potential for oil and gas development within the areas of critical habitat not within known geologic structures, and current oil prices; (4) the remoteness of and unsuitable grazing conditions within the grazing allotments that contain the proposed critical habitat areas; (5) the absence of any known or expected effect on recreational activities; and (6) the unquantifiable benefits that may result from the designation. In addition, no significant impact on the economy or present economic status of Sanpete or Sevier Counties, Utah, is expected as a result of the designation of critical habitat for the Heliotrope milk-vetch. Protective measures for this taxon may require some control over the siting of various features of oil and gas exploration or development. However, due to the very limited extent of the critical habitat of this taxon, it is expected that its designation will have no effect on any exploitation of these possible energy resources.

Available Conservation Measures

Conservation measures provided to species listed as threatened under the Endangered Species Act include recognition, recovery actions. requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by other Federal, State, and private agencies, groups, and individuals. The Act requires that recovery actions be carried out for all listed species; this requirement may assist the Forest Service in carrying out its management plan for A. montii. The required protection by Federal agencies and the Act's taking prohibitions are discussed in part below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat if any is being designated. Regulations implementing this interagency cooperation are codified at 50 CFR Part 402. Section

7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its critical habitat. If a Federal action may adversely affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service. Possible threats to Astragalus montii within the control of the Forest Service and BLM may include oil and gas exploration and energy resource development, grazing, and recreational activities.

Section 9 of the Act and implementing regulations found at 50 CFR 17.71 and 17.72 set forth a series of general trade prohibitions and exceptions that apply to all threatened plant species. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to import or export any threatened plant, transport it in interstate or foreign commerce in the course of a commercial activity, sell or offer it for sale in interstate or foreign commerce, or remove it and reduce it to possession from lands under Federal jurisdiction. Seeds from cultivated specimens of threatened plant species are exempt from trade prohibitions provided that a statement of "cultivated origin" appears on their containers. Certain exceptions can apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.72 also provide for the issuance of permits to carry out otherwise prohibited activities involving threatened species under certain circumstances. With respect to A. montii it is anticipated that few permits will ever be sought or issued since the taxon is not of commercial interest and is not known in cultivation or common in the wild. Requests for copies of the regulations on plants, and inquiries regarding them, may be addressed to the Federal Wildlife Permit Office, U.S. Fish and Wildlife Service, Washington, DC 20240 (703/235-1903).

National Environmental Policy Act

The U.S. Fish and Wildlife Service has determined that an Environmental Assessment, 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 Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the Federal Register on October 25, 1983 (48 FR 49244).

Regulatory Flexibility Act and Executive Order 12291

The Department of the Interior has determined that designation of critical habitat for this species will not constitute a major action under Executive Order 12291 and certifies that this designation will not have a significant economic effect on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 et seq.). The entire critical habitat area for the Heliotrope milkvetch is administered by the Forest Service. Currently, Forest Service management of the critical habitat is apparently compatible with designation of critical habitat. Therefore, no significant economic impacts are expected to result from the critical habitat designation. In addition, no direct costs, enforcement costs, or information collect, or recordkeeping requirements are imposed on small entities by the designation. These determinations are based on a Determination of Effects that is available from the Service's Denver Regional Office Endangered Species Staff (see ADDRESSES section above).

References

Cronquist, A., A.H. Holmgren, N.H. Holmgren, and J.L. Reveal. 1972. Intermountain Flora, Vol. 1. Hafner Publishing Company, New York. 270 pp.

Isely, D. 1983. New combinations and two new varieties in *Astragalus*, *Orophaca*, and *Oxytropis* (Leguminosae). Systematic Botany 8:420–426.

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Thompson, R. 1980. Status report on Astragalus montii. U.S. Forest Service. Manti-LaSal National Forest, Utah.

Welsh, S.L. 1978. Endangered and threatened plants of Utah: A reevaluation. Great Basin Naturalist 38:1–18.

Welsh, S.L. 1978. Utah flora: Fabaceae (Leguminosae). Great Basin Naturalist 38:225–

Welsh, S.L. 1978. Status report on Astragalus montii. U.S. Fish and Wildlife Service, Denver, Colorado.

Authors

The primary authors of this final rule are Dr. James L. Miller and Mr. John L. England (see FOR FURTHER INFORMATION CONTACT section above).

List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife. Fish, Marine mammals, Plants (agriculture).

Regulations Promulgation

Accordingly, Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, is amended as set forth below:

PART 17-[AMENDED]

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

Authority: Pub. L. 93-205, 87 Stat. 884; Pub. L. 94-359, 90 Stat. 911; Pub. L. 95-632, 92 Stat. 3751; Pub. L. 96-159, 93 Stat. 1225; Pub. L. 97-304, 96 Stat. 1411 (16 U.S.C. 1531 et seq.).

2. Amend §17.12(h) by adding the following, in alphabetical order under

the family Fabaceae, to the List of Endangered and Threatened Plants:

§ 17.12 Endangered and threatened plants.

(h) * * *

Species								0-4	
Scientific name		Common	Common name		Historic range		When listed	Critical habitat	Special rules
Fabaceae—Pea family: Austragalus montii	•	•	•	•	•	•	•	*****	
		Heliotrope milk-vetch		U.S.A. (UT)		T	299	17.96(a)	NA
	•	•	•	•	•	•	•		

3. Amend § 17.96(a) by adding critical habitat Astragalus montii, in the same alphabetical order as the species appears in § 17.12(h).

§ 17.96 Critical habitat—plants.

Family Fabaceae: Astrogalus montii (Heliotrope milk-vetch)

Utah, Sanpete County, western
Heliotrope Mountain. T19S R4E, Sec. 34,
SE ¼ of SW ¼ of SE ¼ of NW ¼; S ½
of SE ¼ of SE ¼ of NW ¼; NE ¼ of NW
¼ of NE ¼ of SW ¼; NE ¼ of NE ¼ of
SW ¼; E ½ of SE ¼ of NE ¼ of SW ¼;
NE ¼ of NW ¼ of SE ¼ of SW ¼; S ½
of NW ¼ of SE ¼ of SW ¼; NW ¼ of
SE ¼ of SW ¼; N ½ of SW ¼ of SE ¼
of SW ¼; SW ¼ of SW ¼ of SE ¼ of
SW ¼; W ½ of SE ¼ of NW ¼ of SE
¼; NW ¼ of NW ¼ of SW ¼ of SE
¼; NW ¼ of NW ¼ of SW ¼ of SE
¼; NW ¼ of NW ¼ of SW ¼ of SE
¼; NW ¼ of NW ¼ of SW ¼ of SE
¼; NW ¼ of NW ¼ of SW ¼ of SE
¼; NW ¼ of NW ¼ of SW ¼ of SE ¼.
The primary constituent element is the
white limestone barrens of the Flagstaff
Formation.

