Section 6 Performance Report Review

Project: Cactus trade and collection impact monitoring

Job #: 10

Reviewer: Kathryn Kennedy —**Date:** 1-17-92

Reviewer's Station: Austin ES

Report: X is acceptable as is

_____ needs revision

Other comments:
(You may mark comments on a copy of the report and attach to this form if that is easier.)

They did what they said they intended to do. Several products of this are great. The list of synonomy is very valuable, especially if it includes some of Zimmerman's ideas. The disturbing/frustrating thing is that this doesn't really give us anything that I wouldn't have predicted. This is a survey of <u>open</u> trade and transport which would be expectedly pretty clean. What we have no handle on is illicit, underground trade and international activity. If you compare this report to known losses of cacti at Big Bend and on State Parks the last 2 years, you can see we <u>do</u> have significant collection/trade impacts not revealed to this researcher/study.

FINAL REPORT

As Required by

ENDANGERED SPECIES ACT, SECTION 6

TEXAS

Project No: E-1-3

ENDANGERED AND THREATENED SPECIES CONSERVATION

Job No. 10: Cactus Trade and Collection Impact Monitoring

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November 25, 1991

ABSTRACT

Cactus collectors and traders fall roughly into three categories: (1) individual collectors digging for themselves who may occasionally sell or trade, (2) small and large family nursery operations which may or may not collect extensively from the wild, and (3) large commercial, widely distributed nurseries. Areas of highest cactus diversity also supported the largest number of cactus "diggers" (i.e., individuals who collect from wild populations). More than 72 plant nurseries, diggers, and collectors were surveyed for Texas cacti, both propagated and field collected. In most nurseries cacti had been commercially seed grown. Commercial cactus traders and individual cactus diggers are the most heavily involved in the trade in field collected Texas cacti. Only 24 of the nurseries, diggers, and collectors had enough native plants to record. Most had fewer than 50 individual cacti of 3 or 4 different species. However one dealer had over 1000 freshly dug specimens comprising 13 species. Thirteen Federally listed or Category species were observed. Three Category 2 cacti (Echinocactus asterias, Echinocereus papillosus var. angusticeps, and Echinocereus reichenbachii var. fitchii) were the most heavily collected.

PERFORMANCE REPORT

STATE: Texas **PROJECT NO.:** E-1-3

PROJECT TITLE: Endangered and Threatened Species Conservation.

PERIOD COVERED: September 1, 1990 through August 31, 1991

JOB NUMBER: 10

JOB TITLE: Cactus trade and collection impact monitoring

JOB OBJECTIVE: Evaluate if the commercial trade is a threat to Texas cacti, particularly LE, LT, PE, PT, C1, and C2 species.

SEGMENT OBJECTIVES: A final report with references and tables was completed. A species checklist was compiled using major literature sources. The checklist was used during visits to cactus dealers to indicate taxa and number of individuals in their possession. Tables list field-collected cacti found in nurseries, federally listed and category cacti found in nurseries, Texas nurseries, dealers, and catalogs offering Texas cacti, and Texas cacti offered in catalogs.

ACCOMPLISHMENTS

See Attachment 1

SIGNIFICANT DEVIATIONS

None.

PREPARED BY: Jackie M. Poole — Nov. 22, 1991 (Date)

Botanist (Title)

APPROVED BY: Larry D. McKinney, Ph.D. — 26 Nov. 1991 (Date)

Director, Resource Protection Division

CACTUS TRADE AND COLLECTION IMPACT STUDY

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Texas Natural Heritage Program
Texas Parks and Wildlife Department
Austin, Texas

November 1991

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CACTUS TRADE AND COLLECTION IMPACT SURVEY

Burford L. Westlund

Introduction

Some Texas cactus species are apparently disappearing. Of course, some species are rare due to natural evolutionary processes, and many native plants fall victim to natural causes such as disease, animal depredation, and unusual weather conditions or climatic changes. In contrast, man-caused disturbances are causing other species to become increasingly rare. One of the obvious factors is widespread habitat destruction. The conversion of native rangelands to improved pasture and other agricultural activities take a toll on native plant life. Flood control, road building, urban development and other construction activities contribute significantly.

A great antipathy may be found with many people in their regard to some species of cactus because of the plant's nuisance as a weed or its threat to the person. With the more diminutive cacti the opposite is true all too often. People collect the smaller forms for a hobby or for commercial use. In the worst situation some ranchers lease their land for plant collecting, being only too happy to be rid of the "pests" and have a monetary reward in the effort.

Cactus collectors place a great demand on some cactus species, and this demand stretches beyond the boundaries of North America. Many plants enter the international trade to be sold to foreign cactus collectors, notably in Germany and Japan. Many cacti are slow growing under non-nursery conditions, and collectors do not want to wait for years to have a mature, blooming plant. There are always people ready and willing to dig mature plants from habitats remote and forbidding to supply this need. Each plant dug removes permanently a unique genetic contribution from that population of plants--it will never be replaced!

The pressure on native plant populations from habitat destruction and from collection is likely to increase. Rare cactus species are generally considered to be among the most sought after plants by collectors. Therefore, the purpose of the present investigation is to determine the extent of collection and trade of cactus species from wild populations in Texas, who collects these plants, and the degree of threat this collecting poses to wild cactus populations. The impact of habitat destruction was not investigated during this study.

Methods

Using the recent, major sources of cactus literature available for Texas, a check list was prepared of approximately 135 species and varieties of cacti in Texas. The list features scientific and common names with superscripts identifying a reference source

(Table 1). Benson (1982) is the primary authority with modifications from Taylor (1985), Anderson (1986), Heil and Brack (1986), Pinkava and Parfitt (1988), and Zimmerman (1990). While the taxonomic literature presents in some cases considerable confusion in the Cactaceae, nevertheless it must suffice until a clearer picture of systematics of the family arises in the future through the use of newer taxonomic techniques. Composing the list required much shifting of opinions on the author's part in the resolution of many scientific and common plant names. Some disagreement with the resulting list will no doubt arise. This list was developed for "check-off" forms which were filled out after nursery visits.

The availability of Texas cacti through mail-order was checked by soliciting catalogs from dealers' advertisements in the Cactus and Succulent Journal (U. S.). A list was made of catalogs received (Table 5), and Texas cacti available from these catalogs (Table 6) were entered on a check list. An Oregon dealer's catalog advertised several listed Texas cacti but also noted in the offering that these plants could not be shipped out-of-state because Federal permits had not been obtained. A Hawaiian catalog stated that plants would not be shipped to the mainland.

Information obtained from U. S. Fish & Wildlife Service indicates two dealers at the time of the study had permits to sell listed Texas plants. Abbey Gardens of California offered Ancistrocactus tobuschii, Coryphantha minima, Coryphantha sneedii var. sneedii, and Echinocereus viridiflorus var. davisii. Mesa Gardens of New Mexico offered a greater selection of Texas cacti with Ancistrocactus tobuschii, Coryphantha ramillosa, Coryphantha minima, Coryphantha sneedii var. sneedii, Echinocereus lloydii, Echinocereus reichenbachii var. albertii, Echinocereus viridiflorus var. davisii, and Neolloydia mariposensis. Previously, four other dealers in Texas and California have had permits; these may be in the process of renewal.

Many days of driving and surveying of nurseries in most parts of Texas was conducted; each visit was recorded on the "check-off" forms if dug native cacti were found. Field-collected individuals of all species of Texas cacti were counted or estimated if found. Additionally, cultivated plants of Federally listed or candidate cacti were also noted. After finding suspected field grown plants in a nursery, the species and number of specimens of each species observed was recorded (Table 2).

Nurseries were located by using local telephone directories, by gaining information from other dealers or collectors, from law enforcement officials, from Arizona and Texas Agriculture Departments, and from chance observations while travelling. For example, the name of one large shipper was given to the Texas Natural Heritage Program by a game warden in West Texas who noticed a well-loaded pickup truck. Another large dealer in the El Paso area was reported to the Program by a Federal agent. Since the dealer could not produce proper identification of the origin of the plants, many large cactus specimens were confiscated there by the Federal authorities.

The cooperation of the Coordinator of the floral inspectors of the Texas Department of Agriculture (TDA) in Austin was a great help in locating, through his field inspectors, potential nursery locations to be surveyed. This cooperation was greatly appreciated.

At the Southern Succulent Conference in March, 1990 in New Orleans, Louisiana a survey of the cactus dealers was conducted. Of the three dealers present one was from Texas, one from Oklahoma, and a third from California. The Texas dealer's stock of plants was mainly African succulents with a few cacti of possible Texas origin. The Oklahoma dealer also maintained a very inadequate stock of Texas plants. In April 1990 the San Antonio, Texas Cactus and Succulent Society conducted its annual show and sale. Prominently featured were two flats (ca. 72 plants) of seed grown Echinocereus reichenbachii var. albertii which were advertized to be auctioned at a point during the three day show.

Results

For each species of cactus placed on the check list (Table 1) county maps were prepared which quickly show the distribution of that plant across Texas (derived from Benson 1982). Much more field work could be done in the area of cactus distribution, but how does one go about that with most of Texas in private ownership, both friendly and unfriendly? Areas of concentration in the number of cactus species present include the Trans-Pecos region of Texas and, to a lesser degree, the South Texas Plains in the vicinity of Laredo and Zapata. This corresponds in general with the distribution of cactus "diggers" (i.e. individuals who collect cacti from wild populations). For example, the Van Horn area, which supports a diversity of cactus species, also contains a number of individuals engaged in native cactus collecting. Also, one very active digger who operates both in the Zapata and Laredo areas where large populations of many different species of cacti exist, has shipped tens of thousands of plants into Arizona. Another large center of cactus trading is El Paso, which is in close proximity to the great reserve of cactus populations west of the Pecos.

Cactus collectors and traders may be roughly divided into three categories: (1) individual collectors digging for themselves who may occasionally sell or trade cacti, (2) small and large family nursery operations which may or may not collect extensively from wild populations, and (3) large commercial, widely distributed nurseries.

Many plants were found in landscapes totally unsuited for them. Some were in boxes, probably surviving for weeks and months in a tourist trap. Many individuals were observed dead in that situation, yet were still offered for sale. And so they languish far from their original habitat, and most are doomed.

Some cacti were found in large chain department stores. In one case a number of Echinocereus specimens were dressed in cowboy hats, scarfs, jackets, and eyes. These bore the name "cactus

people" on the labels where a space was provided for giving them a name. Many such plants are destined for overseas shipment. One individual vendor sets up on weekends on a highway along side a large chain store.

Of more than 72 nurseries, diggers, and collectors visited during the survey, 24 had enough native plants to record (Tables 2,3,4). Many of these 24 had fewer than 50 individual cacti representing only three or four species. However, one digger was preparing a shipment to Arizona of 22,400 specimens representing 5 different species. Another dealer had over one thousand freshly dug cactus plants of thirteen species. Notably, a total of thirteen species, both Federally listed and category plants on the U. S. Fish and Wildlife Service's Plant Notice of Review (USFWS 1990) were observed (Table 3). Among these, Echinocactus asterias, Echinocereus papillosus var. angusticeps, and Echinocereus reichenbachii var. fitchii were heavily collected. Although only select species are collected from the wild, apparently, thankfully, the most rare species are so unavailable that they are seldom encountered in nurseries.

One of the most interesting observations was made in the vicinity of Zapata, Texas. A digger of significant numbers of cacti takes great pride in his ability to collect and preserve the native populations at the same time. By removing plants only of a medium size or maturity and leaving the mature plants to produce seed, assurance seems be given at maintaining a level population. On an Echinocereus for example, by taking cuttings from the center of the cluster of heads causing it to reproduce vegetatively, the digger has significantly increased the size of the mature plant thereby increasing the possibility of more sexual reproduction. In another case, as semi-mature plants are removed the soil is loosened encouraging activity in the soil seed bank. Germination begins and new plants begin to replace the one removed.

Since other cactus species are of no interest to the digger in his business they remain undisturbed. Such practices are commendable but only locally practiced in this one known case.

Some states, including Arizona, conduct inspections at their ports of entry. From its Department of Agriculture 68 reports of plant entry of cacti and related species were kindly sent upon request in December 1989. A total count of 471,099 cacti and cactus-like plants was made from these records, covering a time period of only 18 months. While some attempt at a plant count by species was made from these records, over 300,000 were only identified as miscellaneous or bare root plants leaving one to speculate that some of these anonymous plants could be rare or endangered. The plants were shipped out of Texas destined for Arizona and points further west. Most were probably collected within the state, although some may have come from Mexico. Also almost 2500 ocotillo (Fouquieriaceae) and about 600 agave and yucca (Amaryllidaceae and Liliaceae) plants accompanied these shipments. These Arizona reports cover plants moving in only one direction out of Texas, and represent only plants moving down the normal routes of commerce.

What about the many other destinations possible? What about the clandestine trade which has always been with us?

Discussion

In most nurseries observed the cacti were commercially seed grown. The plants were of about the same size and age, and were planted in colorful plastic pots. The planting medium was the same in most cases--peat and pearlite. There were numerous specimens of each species offered for sale. The convenience of having pre-planted cacti in colorful pots is a plus in handling this kind of merchandise, and it is typical of the commercial cactus grower's product. Concern among some vendors regarding compliance with plant regulations, both state and federal, could conceivably have an effect on the more frequent acquisition of this attractive product rather than field collected plants. Field collected plants would not be of uniform size and age, would probably be bare root in many cases, and would not always be in perfect condition. This would contrast greatly with the seed-grown commercial product which is usually perfect in shape, health, and of great variety. Indeed, seedling plants of Mexican and South American cactus species which would have been difficult if not impossible to obtain a few years ago, were displayed along with more common North American species. It would seem cactus collecting has been given a great impetus in recent years with this availability; if only collectors will be satisfied with smaller plants not collected from the wild. There are often seed grown larger plants of the same species offered at higher prices.

Non-licensed (by TDA) dealers in plants seem to be one factor in the removal of field grown plants from the State of Texas. To be sure, there are a great number of cacti shipped by licensed dealers through the legitimate routes where a reasonably effective screening for rare and endangered plants is in place. However, availability of trained personnel to identify these specific species seems to be a problem. All too few people can identify the different species unless they are very distinctive. Some are not! A book (Poole and Riskind, 1987) has been prepared by the Texas Parks and Wildlife Department to aid in rare and endangered plant material identification. While worthwhile concern is given to the rare and endangered plant, one wonders how long the populations of non-listed plants can survive the exodus by the hundreds of thousand or survive the great destruction of habitat.

The individual cactus collector will be most persistent in collecting rare plants in the wild. Of course, his commercially oriented counterpart is the most dangerous predator. The greater trade in field-collected plants is being done by individuals outside the normal, legitimate nursery trade; in some cases by new dealers thinking they have found a great new and rewarding activity.

In summary the general nursery trade is not too much involved in the dispersing of field-collected Texas cacti. Rather it is the individual cactus diggers, plus the commercial cactus traders who

are aiding the flow of plants from natural habitat to collections, landscapes, and curio shops. Unfortunately for the cacti much of this activity is legitimate. It is only the placement of endangered, threatened, or protected plants into the commercial scene that causes the problem that state and federal laws attempt to address.

Recommendations

The public must be educated to respect the natural heritage of our state. Cactus collectors, growers, diggers, and nurserymen need to be educated to respect the limitations of this heritage. If the people who profess to love cacti would carry that concern over into their collecting habits many cacti in the long run could be saved. One of the greatest accomplishments aiding the preservation of cacti and other native plant life would be the enactment by the Texas Legislature of new and enforceable plant laws that are effective and clearly understandable, patterned perhaps after those in Arizona where great interest in native plant preservation exists. This would require new thinking, new resolve by local and state politicians and by landowners to give honest and rightful status to all things natural--if only for its own sake!

Acknowledgements

I acknowledge with grateful appreciation the initial confidence and patient assistance of my supervisor, Jackie M. Poole. Her knowledge and defense of the plants of Texas is outstanding. For invaluable suggestions I mention David H. Riskind. Dr. David D. Diamond read my report and offered good criticism. To the other ladies in the office, Dorinda Sullivan, Bonnie Smith, and especially Penny Denmon, go my sincere thanks for patience, much help, and smiling faces. Mention should be made of the friendliness and cooperation of Darrell Williams, Nursery/Floral Coordinator of the Texas Department of Agriculture. Mr. Larry Richards, Native Plant Law Specialist of the Arizona Commission of Agriculture and Horticulture, graciously sent copies of 71 Arizona Agricultural Inspection Reports covering a period of 18 months. From these reports the astonishing total of 471,000+ plants imported into Arizona from Texas was ascertained. Mr. Francisco Guardiola of Zapata, Texas took me on an unforgettable field trip, and explained, repetitiously and with pride, his conservation methods in collecting of native plants.

Literature Cited

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Benson, L. 1982. The Cacti of the United States and Canada. Stanford University Press, Stanford, California.

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Pinkava, D. J. and B. D. Parfitt. 1988. Nomenclatural Changes in Chihuahuan Desert Opuntia (Cactaceae). Sida 13:125-130.

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Zimmerman, A. D. 1990. Personal communication.

Table 1

Names (with synonymy) of Native Texas Cacti

Scientific Name Common Name Synonym(s)	Status
Acanthocereus pentagonus[3] (see Cereus pentagonus[2,9])	
Ancistrocactus brevihamatus[12] (see Ancistrocactus scheeri[2,9])	
Ancistrocactus scheeri[2,9] fishhook cactus[2], root cactus[3] Echinocactus scheeri[3], Ancistrocactus brevihamatus[12]	
Ancistrocactus tobuschii[1,2,9] Tobusch fishhook cactus[1], fishhook cactus[2] Echinocactus tobuschii[3]	G2 S2 LE E
Ancistrocactus uncinatus var. wrightii[2,9] Turk's head[3], cat claw cactus[3], brown flowered hedgehog[3], Texas hedgehog[3] Echinocactus uncinatus var. wrightii[3]	
Ariocarpus fissuratus[2,3,9] living rock[2,3] star cactus[3], star rock[3], sunami[3], chautle[3], peyote cimarron[3]	
Astrophytum asterias[12] (see Echinocactus asterias[1,2,3,9,11])	
Cereus greggii[2,9] Texas night blooming cereus[3], deer horn cactus[3], chaparral cactus[3], sweet potato cactus[3], Arizona Queen of the night[3] Peniocereus greggii[3]	
Cereus greggii var. greggii[1,2] desert night blooming cereus[1,2]	G3T2 S2 C2
Cereus pentagonus[2,9] barbed wire cactus[2], triangle cactus[3], night blooming cereus[3], organo[3], pitahaya[3] Acanthocereus pentagonus[3]	
Cereus poselgeri[2,9] (see Echinocereus poselgeri[5])	
Cereus spinulosus[2]	

Scientific Name Common Name Synonym(s)	Status
Coryphantha albicolumnaria[4,11] white column[3], silverlace cactus[3] Mammillaria albicolumnaria[3], Coryphantha strobiliformis var. durispina[1,2,9]	
Coryphantha chaffeyi[1,2,11] Chaffey's cory cactus[1] Escobaria chaffeyi[10]	G2 S1 C2
Coryphantha cornifera var. echinus[2,9] Mammillaria echinus[3], Mammillaria scolymoides[3]	
Coryphantha dasyacantha var. dasyacantha[1,2,9,11] dense cory cactus[1] Mammillaria dasyacantha[3]?	G3T2 S2 C2
Coryphantha dasyacantha var. varicolor[2,9] Mammillaria varicolor[3]	
Coryphantha duncanii[2,9] Mammillaria duncanii[3]	
Coryphantha hesteri[1,2,9] Hester's cory cactus[1] Mammillaria hesteri[3]	G2 S2 3C
Coryphantha macromeris[2,9] long mamma[3] Mammillaria macromeris[3]	
Coryphantha macromeris var. macromeris[2,9]	
Coryphantha macromeris var. runyonii[1,2,9] Runyon's cory cactus[1], Runyon's coryphantha[3], dumpling cactus[3] Mammillaria runyonii[3]	G3T2 S2
Coryphantha minima[1,2,9] Nellie cory cactus[1] Mammillaria nellieae[3]	G1 S1 LE E
Coryphantha missouriensis var. caespitosa[2,9] nipple cactus[3] Mammillaria similis[3]	
Coryphantha missouriensis var. robustior[2,9]	
Coryphantha ramillosa[1,2,9] bunched cory cactus[1] Mammillaria ramillosa[3]	G2 S2 LT T

Scientific Name Common Name Synonym(s)	Status*
Coryphantha robertii[2,9] Runyon's Escobaria[3], Junior Tom Thumb cactus[3] Mammillaria roberti[3]	
Coryphantha scheeri[2,9] long tubercled Coryphantha[3], needle mulee[3] Mammillaria scheeri[3]	
Coryphantha scheeri var. scheeri[2,9]	
Coryphantha scheeri var. valida[2,9]	
Coryphantha scheeri var. uncinata[2,9]	
Coryphantha sneedii[9] (see Coryphantha sneedii var. sneedii[2])	
Coryphantha sneedii var. sneedii[1,2] Sneed pincushion cactus[1] Mammillaria sneedii[3]	G3T2 S2 LE E
Coryphantha strobiliformis var. durispina[1,2,9] hard spined cob cory cactus[1] (see Coryphantha albicolumnaria[4,11])	G3T2 S2 C1
Coryphantha strobiliformis var. strobiliformis[2,9] Mammillaria tuberculosa[3] in part, Mammillaria bella[3] according to Benson[2]	
Coryphantha sulcata[2,9] nipple cactus[3], finger cactus[3], pineapple cactus[3] Mammillaria sulcata[3]	
Coryphantha sulcata var. nickelsiae[1,2,9,11] Nickel's cory cactus[1]	G4T2 SH C2
Coryphantha sulcata var. sulcata[2,9]	
Coryphantha vivipara[2,9] spiny star[3], ball cactus[3], pincushion[3] Mammillaria vivipara[3]	
Coryphantha vivipara var. radiosa[2,9] spiny star[3], pincushion[3], New Mexico coryphantha[3], estria del tarde[3] Mammillaria fragrans[3] according to Benson[2,9], Mammillaria vivipara var. radiosa[3] according to Benson[2,9], Mammillaria vivipara var. neomexicana[3] according to Benson[2,9]	
Coryphantha vivipara var. vivipara[2,9] Mammillaria vivipara var. vivipara[3]	

Scientific Name
Common Name
Synonym

Status

Echinocactus asterias[1,2,3,9,11] G2 S1 C2
star cactus[1,2,9], sea urchin cactus[3]
Astrophytum asterias[12]

Echinocactus bicolor var. schottii[3]
(see Thelocactus bicolor var. schottii[2,9])

Echinocactus brevihamatus[3]
(see Ancistrocactus scheeri[2,9])

Echinocactus conoideus[3]
(see Neolloydia conoidea[2,8,9])

Echinocactus flavidispinus[3]
(see Thelocactus bicolor var. flavidispinus[2,9])

Echinocactus hamatacanthus[3]
(see Ferocactus hamatacanthus[2,9])

Echinocactus horizonthalonius[3 in part, 9]
Turk's head[2], devil's head[3], eagle claw[3], bisnagne[3], bisnaga de dulce[3], bisnaga meloncillo[3], manca caballo[9]
(see Echinocactus horizonthalonius var. horizonthalonius[2])

Echinocactus horizonthalonius var. horizonthalonius[2]
Echinocactus horizonthalonius[3 in part, 9], Echinocactus horizonthalonius var. curvispina[3], Echinocactus horizonthalonius var. moelleri[3]

Echinocactus horizonthalonius var. curvispina[3]
(see Echinocactus horizonthalonius var. horizonthalonius[2]

Echinocactus horizonthalonius var. moelleri[3]
(see Echinocactus horizonthalonius var. horizonthalonius[2] according to Benson[2]; according to Weniger[3], see Echinocactus horizonthalonius var. nicholliii[2], however this variety occurs only in Arizona according to Benson[2])

Echinocactus intertextus[3]
(see Neolloydia intertexta[2,9])

Echinocactus intertextus var. dasyacanthus[3]
(see Neolloydia intertexta var. dasyacantha[2,9])

Echinocactus intertextus var. intertextus[3]
(see Neolloydia intertexta var. intertexta[2,9])

Echinocactus mariposensis[3]
(See Neolloydia mariposensis[1,2,9])

Echinocactus scheeri[3]
(see Ancistrocactus scheeri[2,9])

Echinocactus setispinus[3]
(see Ferocactus setispinus[2,9])

Echinocactus setispinus var. hamatus[3]
(see Ferocactus setispinus[2,9])

Echinocactus setispinus var. setaceus[3]
(see Ferocactus setispinus[2,9])

Echinocactus sinuatus[3]
(see Ferocactus hamatacanthus var. sinuatus[2,9])

Echinocactus texensis[2,3,9]
horse crippler[2,3], devil's head[2,3], candy cactus[3], manco caballo[3], visnaga[3], devil's pincushion[9]
Homalocephala texensis[12]

Echinocactus tobuschii[3]
(see Ancistrocactus tobuschii[1,2,9])

Echinocactus uncinatus var. wrightii[3]
(see Ancistrocactus uncinatus var. wrightii[2,9])

Echinocactus warnockii[3]
(see Neolloydia warnockii[2,9])

Echinocactus wislizenii[3]
(see Ferocactus wislizenii[2,9])

Echinocereus baileyi[3]
(see Echinocereus reichenbachii var. baileyi[5])

Echinocereus berlandieri[5]
alicoche[3]
Echinocereus berlandieri var. berlandieri[2], Echinocereus blanckii[3,9], Echinocereus blanckii var. blanckii[9]

Echinocereus berlandieri[3]
(see Echinocereus pentalophus[5,2,3,9])

Echinocereus berlandieri var. angusticeps[2]
(see Echinocereus papillosus var. angusticeps[5,1,3,11])

Echinocereus berlandieri var. berlandieri[2]
(see Echinocereus berlandieri[5])

Echinocereus berlandieri var. papillosus[2]
(see Echinocereus papillosus var. papillosus[5,3])

Echinocereus blanckii[3,9]
(see Echinocereus berlandieri[5])

Echinocereus blanckii var. blanckii[9]
(see Echinocereus berlandieri[5])

Echinocereus blanckii var. angusticeps[9]
(see Echinocereus papillosus var. angusticeps[5,1,3,11] in part, Echinocereus papillosus var. papillosus[5,3] in part)

Echinocereus caespitosus[3]
(see Echinocereus reichenbachii[5,2,9]

Echinocereus caespitosus var. caespitosus[3]
(see Echinocereus reichenbachii var. reichenbachii[5,2,9])

Echinocereus caespitosus var. minor[3]
(see Echinocereus reichenbachii var. reichenbachii[5,2,9])

Echinocereus caespitosus var. perbellus[3]
(see Echinocereus reichenbachii var. perbellus[5,2,9]

Echinocereus chisoensis[3]
(see Echinocereus chisoensis var. chisoensis[5,1])

Echinocereus chisoensis var. chisoensis[1,5] G2T1 S1 LT T
Chisos hedgehog cactus[1]
Echinocereus reichenbachii var. chisosensis[2,9], Echinocereus chisoensis[3]

Echinocereus chloranthus[5]
green flowered torch cactus[3], green flowered pitaya[3]
Echinocereus chloranthus[2,3,9] in part

Echinocereus chloranthus var. chloranthus[5,3,2]
Echinocereus chloranthus[9] in part, Echinocereus russanthus[3] according to Benson[2]

Echinocereus chloranthus var. cylindricus[5]
Echinocereus viridiflorus var. cylindricus[2,3,9]

Echinocereus chloranthus var. neocapillus[5,1,2,3,11] G3T1 S1 C2
golden spined hedgehog cactus[1]
Echinocereus chloranthus[9] in part

Echinocereus chloranthus var. russanthus[5]
Echinocereus chloranthus[9] in part, Echinocereus chloranthus var. chloranthus[2] in part, Echinocereus russanthus[3]

Echinocereus dasyacanthus[3]
(see Echinocereus pectinatus var. dasyacanthus[5])

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Echinocereus dasyacanthus var. dasyacanthus[3]
(see Echinocereus pectinatus var. dasyacanthus[5])

Echinocereus dasyacanthus var. hildmannii[3]
(see Echinocereus pectinatus var. dasyacanthus[5])

Echinocereus davisii[3]
(see Echinocereus viridiflorus var. davisii[1,5,2,9])

Echinocereus dubius[3]
(see Echinocereus enneacanthus[5])

Echinocereus enneacanthus[5]
strawberry cactus[3], pitaya[3]
Echinocereus dubius[3], Echinocereus enneacanthus var. dubius[2,9]

Echinocereus enneacanthus var. brevispinus[5]
Echinocereus enneacanthus var. brevispinus[2,9] in part, Echinocereus enneacanthus var. carnosus[3]?, Echinocereus enneacanthus var. enneacanthus[3] in part

Echinocereus enneacanthus var. carnosus[3]
(see Echinocereus enneacanthus var. brevispinus[5]?)

Echinocereus enneacanthus var. dubius[2,9]
(see Echinocereus enneacanthus[5])

Echinocereus enneacanthus var. enneacanthus[5]
Echinocereus enneacanthus var. enneacanthus[2,3,9] in part

Echinocereus enneacanthus var. stramineus[2,9]
(see Echinocereus stramineus[5,3])

Echinocereus fendleri[5,2,3,9]
Fendler's pitaya[3], Fendler's hedgehog cactus[3], purple hedgehog[3], strawberry cactus[3], torch cactus[3], sitting cactus[3], pink flowered Echinocereus[3]

Echinocereus fendleri var. fendleri[5,2,3,9]

Echinocereus fendleri var. rectispinus[5,2,3,9]

Echinocereus fitchii[3]
(see Echinocereus reichenbachii var. fitchii[1,5,2,9,11])

Echinocereus lloydii[1,2,3,9] — G2Q S2 LE E
Lloyd's hedgehog cactus[1]
possible hybrid of Echinocereus pectinatus var. dasyacanthus and Echinocereus triglochidiatus var. ?[5]

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Echinocereus melanocentrus[3]
(see Echinocereus reichenbachii var. albertii[1,2,9])

Echinocereus papillosus[5,3]
yellow flowered Echinocereus[3], yellow flowered alicoche[3]

Echinocereus papillosus var. angusticeps[1,5,3,11] G3T1 S1 C2
small papillosus[3]
Echinocereus berlandieri var. angusticeps[2], Echinocereus blanckii var. angusticeps[9] in part

Echinocereus papillosus var. papillosus[5,3]
Echinocereus berlandieri var. papillosus[2], Echinocereus blanckii var. angusticeps[9] in part

Echinocereus pectinatus var. ctenoides[3]
(see Echinocereus pectinatus var. dasyacanthus[5])

Echinocereus pectinatus var. dasyacanthus[5]
Texas rainbow cactus[3], golden rainbow hedgehog[3], yellow flowered pitaya[3]
Echinocereus dasyacanthus[3], Echinocereus dasyacanthus var. dasyacanthus[3], Echinocereus dasyacanthus var. hildmannii[3], Echinocereus pectinatus var. ctenoides[3], Echinocereus pectinatus var. neomexicanus[2,9]

Echinocereus pectinatus var. minor[2,9]
(possible hybrid of Echinocereus pectinatus var. dasyacanthus and Echinocereus triglochidiatus var. ?[5])

Echinocereus pectinatus var. neomexicanus[2,9]
(see Echinocereus pectinatus var. dasyacanthus[5])

Echinocereus pectinatus var. pectinatus[5,2,9]

Echinocereus pectinatus var. wenigeri[5,2,3,9]
comb hedgehog[3]

Echinocereus pentalophus[5,2,3,9]
alicoche[2], ladyfinger cactus[3]
Echinocereus berlandieri[3]

Echinocereus pentalophus var. pentalophus[5]

Echinocereus polyacanthus var. rosei[3]
(see Echinocereus triglochidiatus var. neomexicana[5,2,9] and Echinocereus triglochidiatus var. gurneyi[5,2,9])

Echinocereus poselgeri[5]
sacasil[2], pencil cactus[3], dahlia cactus[3]
Cereus poselgeri[2,9], Wilcoxia poselgeri[3]

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Echinocereus reichenbachii[5,2,9]
lace cactus[3], purple candle[3], Classen's cactus[3]
Echinocereus caespitosus[3]

Echinocereus reichenbachii var. albertii[1,2,9] G4T1 S1 LE E
black lace cactus[1]
Echinocereus melanocentrus[3], Echinocereus reichenbachii var. fitchii[5] in part

Echinocereus reichenbachii var. albispinus[2,9]
(see Echinocereus reichenbachii var. baileyi[5])

Echinocereus reichenbachii var. baileyi[5]
Echinocereus baileyi[3], Echinocereus reichenbachii var. albispinus[2,9]

Echinocereus reichenbachii var. chisosensis[2,9]
(see Echinocereus chisoensis var. chisoensis[1,5])

Echinocereus reichenbachii var. fitchii[1,5,2,9,11] G4T2 S2 C2
Fitch's hedgehog cactus[1]
Echinocereus fitchii[3]

Echinocereus reichenbachii var. perbellus[5,2,9]
Echinocereus caespitosus var. perbellus[3]

Echinocereus reichenbachii var. reichenbachii[5,2,9]
Echinocereus caespitosus var. caespitosus[3], Echinocereus caespitosus var. minor[3]

Echinocereus roetteri[3]
(possible hybrid of Echinocereus pectinatus var. dasyacanthus and Echinocereus triglochidiatus var. ?[5])

Echinocereus russanthus[3]
(see Echinocereus chloranthus var. russanthus[5], Echinocereus chloranthus var. chloranthus[5,3,2] according to Benson[2])

Echinocereus stramineus[5,3]
strawberry cactus[3], pitaya[3], organo[3]
Echinocereus enneacanthus var. stramineus[2,9]

Echinocereus triglochidiatus[5,2,9]
red-flowered hedgehog cactus[2]
Echinocereus triglochidiatus[3] in part

Echinocereus triglochidiatus var. gurneyi[5,2,9]
Echinocereus polyacanthus var. rosei[3] in part

Echinocereus triglochidiatus var. melanacanthus[5,2,9]
Echinocereus triglochidiatus var. octacanthus[3] in part

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Echinocereus triglochidiatus var. neomexicanus[5,2,9] Echinocereus polyacanthus var. rosei[3] in part	
Echinocereus triglochidiatus var. octacanthus[3] (see Echinocereus triglochidiatus var. melanacanthus[5,2,9])	
Echinocereus triglochidiatus var. paucispinus[5,2,9]	
Echinocereus viridiflorus[5,2,3,9] green flowered torch cactus[3], green flowered pitaya[3], nylon cactus[3], New Mexico rainbow cactus[3]	
Echinocereus viridiflorus var. correllii[1,5,2,9] Correll's green pitaya[1] Echinocereus viridiflorus var. standleyi[3]	G4T2 S2 3C
Echinocereus viridiflorus var. cylindricus[2,3,9] (see Echinocereus chloranthus var. cylindricus[5])	
Echinocereus viridiflorus var. davisii[1,5,2,9] Davis' green pitaya[1] Echinocereus davisii[3]	G4T1 S1 LE E
Echinocereus viridiflorus var. standleyi[3] (see Echinocereus viridiflorus var. correllii[1,5,2,9])	
Echinocereus viridiflorus var. viridiflorus[5,2,3,9]	
Echinomastus intertextus[8] (see Neolloydia intertexta[2,9])	
Echinomastus mariposensis[8] (see Neolloydia mariposensis[2,9,1])	
Echinomastus warnockii[8] (see Neolloydia warnockii[2,9])	
Epithelantha bokei[2,9,11] Epithelantha micromeris[3] in part	G3 S3 C2
Epithelantha micromeris[2,3 in part,9] button cactus[3], mulato[3]	
Escobaria chaffeyi[10] (see Coryphantha chaffeyi[1,2,11])	
Escobaria guadalupensis[6,1,11] Guadalupe pincushion[1]	G1 S1 C2

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Ferocactus hamatacanthus[2,9]
Turk's head[3,9], visnaga[3], biznaga costillona[3], biznaga espinosa[3], biznaga ganchuda[3], biznaga limilla[3], biznaga de tuna[3], biznaga de limilla[10]
Echinocactus hamatacanthus[3]

Ferocactus hamatacanthus var. hamatacanthus[2,9]

Ferocactus hamatacanthus var. sinuatus[2,9]
lower Rio Grande valley barrel[3]
Echinocactus sinuatus[3]

Ferocactus setispinus[2,9]
fishhook cactus[3], hedgehog cactus[3], twisted-rib cactus[3]
Echinocactus setispinus[3], Echinocactus setispinus var. hamatus[3], Echinocactus setispinus var. setaceus[3]

Ferocactus wislizenii[2,9]
barrel cactus[3], fishhook barrel[3], candy barrel[3], bisnaga[3], biznaga[3], biznaga de agua[3], southwestern barrel cactus[9]
Echinocactus wislizenii[3]

Homalocephala texensis[12]
(see Echinocactus texensis[2,3,9])

Lophophora williamsii[2,3,9]
peyote[2,3,9], mescal button[3], whiskey cactus[3], dry whiskey[3]
Lophophora williamsii var. echinata[3], Lophophora williamsii var. williamsii[3]

Lophophora williamsii var. echinata[3]
(see Lophophora williamsii[2,9])

Lophophora williamsii var. williamsii[3]
(see Lophophora williamsii[2,9])

Mammillaria albicolumnaria[3]
(see Coryphantha albicolumnaria[4,11])

Mammillaria bella[3]
(see Coryphantha strobiliformis var. strobiliformis[2,9])

Mammillaria dasyacantha[3]
(see Coryphantha dasyacantha var. dasyacantha[2,1,9,11?])

Mammillaria duncanii[3]
(see Coryphantha duncanii[2,9])

Mammillaria echinus[3]
(see Coryphantha cornifera var. echinus[2,9])

Scientific Name Common Name Synonym(s)	Status

Mammillaria fragrans[3]
(see Coryphantha vivipara var. radiosa[2,9])

Mammillaria grahamii[2,9]
fishhook cactus[3], pincushion cactus[3], sunset cactus[3]
Mammillaria microcarpa[3] in part

Mammillaria grahamii var. grahamii[2]

Mammillaria gummifera var. applanata[9]
(see Mammillaria heyderi var. heyderi[2])

Mammillaria gummifera var. hemisphaerica[9]
(see Mammillaria heyderi var. hemisphaerica[2])

Mammillaria gummifera var. meiacantha[9]
(see Mammillaria heyderi var. meiacantha[2])

Mammillaria hesteri[3]
(see Coryphantha hesteri[1,2,9])

Mammillaria heyderi[2,3 in part]
nipple cactus[3], biznaga de chilitos[3], little chilis[3]

Mammillaria heyderi var. applanata[3]
(see Mammillaria heyderi var. heyderi[2])

Mammillaria heyderi var. hemisphaerica[2,3 in part]
Mammillaria heyderi var. heyderi[3] in part, Mammillaria gummifera var. hemisphaerica[9]

Mammillaria heyderi var. heyderi[2,3 in part]
Mammillaria gummifera var. applanata[9], Mammillaria heyderi var. applanata[3]

Mammillaria heyderi var. meiacantha[2]
biznaga de chilitos[3], little chilis[3]
Mammillaria meiacantha[3], Mammillaria gummifera var. meiacantha[9]

Mammillaria lasiacantha[2,9]
golf ball pincushion[6]
Mammillaria lasiacantha var. denudata[3], Mammillaria lasiacantha var. lasiacantha[3]

Mammillaria lasiacantha var. denudata[3]
(see Mammillaria lasiacantha[2,9])

Mammillaria lasiacantha var. lasiacantha[3]
(see Mammillaria lasiacantha[2,9])

Scientific Name Common Name Synonym(s)	Status

Mammillaria longimamma var. sphaerica[2,9]
Mammillaria sphaerica[3]

Mammillaria macromeris[3]
(see Coryphantha macromeris[2,9])

Mammillaria meiacantha[3]
(see Mammillaria heyderi var. meiacantha[2])

Mammillaria microcarpa[3] in part
(see Mammillaria grahamii[2,9], not Mammillaria microcarpa[2])

Mammillaria multiceps[3]
(see Mammillaria prolifera var. texana[2,9])

Mammillaria nellieae[3]
(see Coryphantha minima[1,2,9])

Mammillaria pottsii[2,3,9]

Mammillaria prolifera var. texana[2,9]
hair covered cactus[3], grape cactus[3]
Mammillaria multiceps[3]

Mammillaria ramillosa[3]
(see Coryphantha ramillosa[1,2,9])

Mammillaria roberti[3]
(see Coryphantha robertii[2,9])

Mammillaria runyonii[3]
(See Coryphantha macromeris var. runyonii[1,2,9])

Mammillaria scheeri[3]
(see Coryphantha scheeri[2,9])

Mammillaria scolymoides[3]
(see Coryphantha cornifera var. echinus[2,9])

Mammillaria similis[3]
(see Coryphantha missouriensis var. caespitosa[2,9])

Mammillaria sneedii[3]
(see Coryphantha sneedii var. sneedii[1,2])

Mammillaria sphaerica[3]
(see Mammillaria longimamma var. sphaerica[2,9])

Mammillaria sulcata[3]
(see Coryphantha sulcata[2,9])

Scientific Name Common Name Synonym(s)	Status

Mammillaria tuberculosa[3] in part
(see Coryphantha strobiliformis var. strobiliformis[2,9])

Mammillaria varicolor[3]
(see Coryphantha dasyacantha var. varicolor[2,9])

Mammillaria vivipara[3]
(see Coryphantha vivipara[2,9])

Mammillaria vivipara var. neomexicana[3]
(see Coryphantha vivipara var. radiosa[2,9])

Mammillaria vivipara var. radiosa[3]
(see Coryphantha vivipara var. radiosa[2])

Mammillaria vivipara var. vivipara[3]
(see Coryphantha vivipara var. vivipara[2,9])

Mammillaria wrightii[3,9]
(see Mammillaria wrightii var. wrightii[2])

Mammillaria wrightii var. wrightii[2]
Mammillaria wrightii[3,9]

Neolloydia conoidea[2,8,9]
Echinocactus conoideus[3]

Neolloydia gautii[1,2] G1Q S1 3B
Gaut's butterfly[1]
excluded from Neolloydia as a questionable species[8]

Neolloydia intertexta[2,9]
white viznagita[9], early bloomer[3], white-flowered visnagita[3]
Echinocactus intertextus[3], Echinomastus intertextus[8]

Neolloydia intertexta var. dasyacantha[2,9]
Echinocactus intertextus var. dasyacanthus[3], Echinomastus intertextus[8] in part

Neolloydia intertexta var. intertexta[2,9]
Echinocactus intertextus var. intertextus[3], Echinomastus intertextus[8] in part

Neolloydia mariposensis[1,2,9] G2 S2 LT T
Lloyd's mariposa cactus[1]
Echinocactus mariposensis[3], Echinomastus mariposensis[8]

Neolloydia warnockii[2,9]
Echinocactus warnockii[3], Echinomastus warnockii[8]

Scientific Name Common Name Synonym(s)	Status

Opuntia arenaria[1,2,3,9,11] G2 S2 C2
sand prickly pear[1]

Opuntia atrispina[2,9,3 in part]
Opuntia phaeacantha var. nigricans[3] in part according to Weniger[3]

Opuntia aureispina[1,7,11] G1 S1 C2
golden spined prickly pear[1]
Opuntia macrocentra var. aureispina[10]

Opuntia ballii[3]
(see Opuntia macrorhiza var. pottsii[2,9])

Opuntia compressa[3,9]
(see Opuntia humifusa[2] in part)

Opuntia compressa var. allairei[3]
(see Opuntia humifusa var. humifusa[2])

Opuntia compressa var. fusco-atra[3]
(see Opuntia humifusa var. humifusa[2])

Opuntia compressa var. grandiflora[3]
(hybrid according to Benson[2])

Opuntia compressa var. humifusa[3] (in part according to Weniger)
(see Opuntia humifusa var. humifusa[2])

Opuntia compressa var. macrorhiza[3] (in part according to Weniger)
(see Opuntia macrorhiza var. macrorhiza[2,9])

Opuntia compressa var. microsperma[3]
(see Opuntia humifusa var. humifusa[2], but not according to Weniger)

Opuntia compressa var. stenochila[3]
(see Opuntia macrorhiza var. macrorhiza[2])

Opuntia cymochila[3]
(see Opuntia macrorhiza var. macrorhiza[2,9])

Opuntia davisii[3]
(see Opuntia tunicata var. davisii[2,9])

Opuntia engelmannii[3]
(according to Benson[2,9] this species commonly refers to Opuntia phaeacantha var. discata; according to Weniger[3] this species is equivalent to Benson's Opuntia lindheimeri[2,9] ; Benson[2,9] states that the type specimen of this name is Opuntia ficus-indica)

Opuntia engelmannii var. aciculata[3]
(see Opuntia lindheimeri var. lindheimeri[2])

Opuntia engelmannii var. alata[3]
(see Opuntia lindheimeri var. lindheimeri[2,9])

Opuntia engelmannii var. cacanapa[3]
(see Opuntia lindheimeri var. lindheimeri[2,9], Opuntia lindheimeri var. tricolor[2,9] according to Weniger[3])

Opuntia engelmannii var. cyclodes[3]
(see Opuntia phaeacantha var. major[2,9])

Opuntia engelmannii var. dulcis[3]
(see Opuntia phaeacantha var. phaeacantha[2,9])

Opuntia engelmannii var. engelmannii[3]
(see Opuntia phaeacantha var. discata[2,9] in part according to Weniger[3])

Opuntia engelmannii var. flexispina[3]
(see Opuntia strigil var. flexospina[2,1,11])

Opuntia engelmannii var. linguiformis[3]
(see Opuntia lindheimeri var. linguiformis[2,9,1,11])

Opuntia engelmannii var. subarmata[3]
(hybrid according to Benson[2,9])

Opuntia engelmannii var. texana[3]
(see Opuntia lindheimeri var. lindheimeri[2,9] according to Benson[2,9], Opuntia lindheimeri var. lehmanii[2] in part according to Weniger[3])

Opuntia ficus-indica[2,9]
Indian fig[2,9], nopal de castilla[9]
Opuntia engelmannii (type specimen) according to Benson[2,9]

Opuntia fragilis[3,9]
(see Opuntia fragilis var. fragilis[2])

Opuntia fragilis var. fragilis[2]
little prickly pear[2], brittle cactus[3], fragile prickly pear[3]
Opuntia fragilis[3,9]

Opuntia grahamii[3]
(see Opuntia schottii var. grahamii[2,9])

Opuntia humifusa[2]
eastern prickly pear[2]
Opuntia compressa[3,9] in part

Opuntia humifusa var. austrina[2]

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Opuntia humifusa var. humifusa[2]
Opuntia compressa var. humifusa[3] in part according to Weniger[3], Opuntia compressa var. microsperma[3] according to Benson[2] but not according to Weniger[3], Opuntia compressa var. fusco-atra[3], Opuntia compressa var. allairei[3]

Opuntia imbricata var. arborescens[3]
(see Opuntia imbricata var. imbricata[2,9])

Opuntia imbricata var. argentea[1,2,9,11] G5T1 S1 C2
silver cholla[1]

Opuntia imbricata var. imbricata[2,9]
tree cholla[2,9], coyonostole[2], tree cactus[3], cane cactus[3], candelabrum cactus[3], cholla[3], velas de coyote (coyote candles)[3], coyonostle[9]
Opuntia imbricata var. arborescens[3], Opuntia imbricata var. vexans[3]

Opuntia imbricata var. vexans[3]
(see Opuntia imbricata var. imbricata[2,9])

Opuntia kleiniae[3,9] in part
(see Opuntia kleiniae var. kleiniae[2])

Opuntia kleiniae var. kleiniae[2]
Klein cholla[2], candle cholla[3], tasajillo[9]
Opuntia kleiniae[3,9] in part

Opuntia leptocarpa[3]
(see Opuntia macrorhiza var. macrorhiza[2,9])

Opuntia leptocaulis[2,3,9]
desert Christmas cactus[2,3,9], pencil cholla[2], tasajillo[2,3,9], tesajo[2,9], slender stem cactus[3], aguijilla[3], garrambullo[3]

Opuntia lindheimeri[2,9]
Texas prickly pear[2,9], nopal[3], tuna[3], Engelmann's prickly pear[3], flaming prickly pear[3], nopal prickly pear[9], cacanapo[9]
Opuntia engelmannii according to Weniger[3]

Opuntia lindheimeri var. lehmanii[2]
Opuntia engelmannii var. texana[3] in part according to Weniger[3]

Opuntia lindheimeri var. lindheimeri[2,9]
Texas prickly pear[2],
Opuntia engelmannii var. aciculata[3], Opuntia engelmannii var. alata[3], Opuntia engelmannii var. cacanapa[3] according to Benson[2,9], Opuntia engelmannii var. texana[3] according to Benson[2,9], Opuntia tardospina[3]

Opuntia lindheimeri var. linguiformis[1,2,9,11] G5T1Q S1 C2
cow tongue prickly pear[1,9], cow's tongue[2], cow's tongue cactus[3], lingua de vaca[2], lengua de vaca[3]
Opuntia engelmannii var. linguiformis[3]

Opuntia lindheimeri var. tricolor[2,9]
Opuntia engelmannii var. cacanapa[3] according to Weniger[3]

Opuntia macrocentra[3]
(see Opuntia violacea var. macrocentra[2,9])

Opuntia macrocentra var. aureispina[10]
(see Opuntia aureispina[1,7,11])

Opuntia macrorhiza var. macrorhiza[2,9]
plains prickly pear[2]
Opuntia compressa var. macrorhiza[3] in part according to Weniger[3], Opuntia compressa var. stenochila[3], Opuntia cymochila[3], Opuntia leptocarpa[3]

Opuntia macrorhiza var. pottsii[2,9]
Opuntia pottsii[3], Opuntia ballii[3], Opuntia phaeacantha var. tenuispina[3]

Opuntia phaeacantha[2,3,9]
New Mexico prickly pear[3], brown-spined prickly pear[3], tulip prickly pear[3]

Opuntia phaeacantha var. brunnea[3]
(see Opuntia phaeacantha var. major[2,9] according to Benson[2,9], in part according to Weniger[3])

Opuntia phaeacantha var. camanchica[2,3,9]

Opuntia phaeacantha var. discata[2,9]
Opuntia engelmannii[2,9], Opuntia engelmannii var. engelmannii[3] in part according to Weniger[3]

Opuntia phaeacantha var. major[2,9,3 in part]
Opuntia phaeacantha var. brunnea[3] in part according to Weniger[3], Opuntia engelmannii var. cyclodes[3]

Opuntia phaeacantha var. nigricans[3]
(see Opuntia phaeacantha var. phaeacantha[2] according to Benson[2], includes part of Opuntia atrispina[2,9] according to Weniger[3])

Opuntia phaeacantha var. phaeacantha[2]
Opuntia phaeacantha var. nigricans[3] according to Benson[2], Opuntia engelmannii var. dulcis[3]

Scientific Name
Common Name
Synonym(s)

Status

Opuntia phaeacantha var. spinosibacca[2,9]
Opuntia spinosibacca[3]

Opuntia phaeacantha var. tenuispina[3]
(see Opuntia macrorhiza var. pottsii[2,9])

Opuntia polyacantha[2,3,9]
Plains prickly pear[2,9], hunger cactus[3], starvation cactus[3]

Opuntia polyacantha var. polyacantha[2,9]

Opuntia polyacantha var. rufispina[2,9]

Opuntia polyacantha var. trichophora[2,9]

Opuntia pottsii[3]
(see Opuntia macrorhiza var. pottsii[2,9])

Opuntia pusilla[2,3]
crow-foot prickly pear[3], cock-spur cactus[3], cockle-burr cactus[3], sand-burr cactus[3]

Opuntia rufida[2,3,9]
blind prickly pear[2,9], blind pear[3]

Opuntia schottii[2,9,3 in part]
clavellina[2,9]

Opuntia schottii var. grahamii[2,9]
mounded dwarf cholla[3]
Opuntia grahamii[3]

Opuntia schottii var. schottii[2,9]
devil cactus[3], dog cholla[3], clavellina[3]
Opuntia schottii[3]

Opuntia spinosibacca[3]
(see Opuntia phaeacantha var. spinosibacca[2,9])

Opuntia stanlyi[2,3]
devil cholla[3]
only var. stanlyi occurs in Texas

Opuntia stanlyi var. stanlyi[2]
devil cholla[3], Stanly's cholla[3], creeping cholla[3],
Opuntia stanlyi[3]

Opuntia stricta[3]
(see Opuntia stricta var. stricta[2] according to Weniger[3])

Opuntia stricta var. dillenii[2,9]

Scientific Name Common Name Synonym(s)	Status

Opuntia stricta var. stricta[2,9]
southern spineless cactus[2,9], pest pear[3]
Opuntia stricta[3]

Opuntia strigil[3]
(see Opuntia strigil var. strigil[2])

Opuntia strigil[9]
(see Opuntia strigil var. strigil[2] and Opuntia strigil var. flexospina[2])

Opuntia strigil var. flexospina[1,2,11] G3T1 S1 C2
few spined marble fruited prickly pear[1]
Opuntia engelmannii var. flexispina[3], Opuntia strigil[9]

Opuntia strigil var. strigil[2]
Opuntia strigil[3,9]

Opuntia tardospina[3]
(see Opuntia lindheimeri var. lindheimeri[2,9])

Opuntia tunicata[3]
(see Opuntia tunicata var. tunicata[2,9])

Opuntia tunicata var. davisii[2,9]
Opuntia davisii[3]

Opuntia tunicata var. tunicata[2,9]
sheathed cholla[2,9], abrojo[2,3], clavellina[3],
Opuntia tunicata[3]

Opuntia violacea[2,9]
purple prickly pear[2,9]

Opuntia violacea var. castetteri[2,9]

Opuntia violacea var. macrocentra[2,9]
black-spined prickly pear[2], purple prickly pear[3]
Opuntia macrocentra[3]

Opuntia violacea var. santa-rita[2,3,9]
purple prickly pear[2]

Opuntia violacea var. violacea[2]

Pediocactus papyracanthus[1,2,3,11] G2 S1 C2
grama grass cactus[2,3], paper-spined cactus[1,3], Toumeya[3]

Peniocereus greggii[3]
(see Cereus greggii[2,9])

Scientific Name Common Name Synonym(s)	Status
Thelocactus bicolor var. flavidispinus[1,2,9,11] straw spine cactus[1] Echinocactus flavidispinus[3]	G4T2 S2 C2
Thelocactus bicolor var. schottii[2,9] glory of Texas[3] Echinocactus bicolor var. schottii[3]	
Wilcoxia poselgeri[3] (see Echinocereus poselgeri[5]	

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Status

G1 - less than 6 occurrences known globally; critically imperiled, especially vulnerable to extinction

G2 - 6-20 occurrences known globally; imperiled and very vulnerable to extinction throughout its range

G3 - 21-100 occurrences known globally; either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single state or physiographic region), or because of other factors making it vulnerable to extinction throughout its range

G4 - more than 100 occurrences known, apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery

G5 - demonstrably secure globally, though it may be quite rare in parts of its range

S1 - less than 6 occurrences known in Texas; critically imperiled in Texas; especially vulnerable to extirpation from the state

S2 - 6-20 known occurrences in Texas; imperiled in the state because of rarity; very vulnerable to extirpation from the state

S3 - 21-100 known Texas occurrences; either rare or uncommon in the state

SH - historical in Texas, perhaps having not been verified in the past 50 years, but suspected to be extant

A global (G) or state (S) rank followed by "Q" indicates that the taxonomic status of the plant is a matter of conjecture. A "T" subrank following a global rank denotes subspecific taxa. All ranks are assigned by the Texas Natural Heritage Program.

LE - listed as federally endangered

LT - listed as federally threatened

C1 - federal candidate with enough information available to propose for listing

C2 - federal candidate under current review for possible listing but more information needed

3B - taxa that are no longer taxonomically valid

3C - no longer under federal review for listing, either more abundant or widespread than was previously thought

E - listed as state endangered

T - listed as state threatened

Table 2

Field-Collected Cacti Observed in Nurseries

Scientific Name	Number of Individuals
Ancistrocactus scheeri	17
Ancistrocactus uncinatus var. wrightii	16
Ariocarpus fissuratus	85
Cereus greggii var. greggii	57
Cereus pentagonus	8
Coryphantha cornifera var. echinus	5
Coryphantha dasyacantha var. dasyacantha	4
Coryphantha hesteri	15
Coryphantha macromeris var. macromeris	37
Coryphantha macromeris var. runyonii	1
Coryphantha missouriensis var. caespitosa	23
Coryphantha ramillosa	2
Coryphantha robertii	24
Coryphantha scheeri var. valida	9
Coryphantha strobiliformis var. strobiliformis	60
Coryphantha sulcata var. sulcata	56
Coryphantha vivipara var. radiosa	14
Coryphantha vivipara var. vivipara	89

Scientific Name	Number of Individuals
Echinocactus asterias	400
Echinocactus horizonthalonius var. horizonthalonius	299
Echinocactus texensis	154
Echinocereus berlandieri	7
Echinocereus chloranthus var. chloranthus	1
Echinocereus chloranthus var. cylindricus	23
Echinocereus enneacanthus var. dubius	11
Echinocereus enneacanthus var. enneacanthus	4851
Echinocereus fendleri var. fendleri	4
Echinocereus papillosus var. angusticeps	36
Echinocereus pectinatus var. dasyacanthus	453
Echinocereus pectinatus var. pectinatus	21
Echinocereus pentalophus var. pentalophus	15
Echinocereus poselgeri	7
Echinocereus reichenbachii var. fitchii	5005
Echinocereus reichenbachii var. perbellus	37
Echinocereus reichenbachii var. reichenbachii	293
Echinocereus stramineus	16

Scientific Name	Number of Individuals
Echinocereus triglochidiatus var. melanacanthus	380
Echinocereus triglochidiatus var. neomexicanus	3
Echinocereus viridiflorus var. viridiflorus	58
Epithelantha bokei	25
Epithelantha micromeris	6
Ferocactus hamatacanthus var. hamatacanthus	200
Ferocactus setispinus	7673
Ferocactus wislizenii	229
Mammillaria grahamii var. grahamii	9
Mammillaria heyderi var. hemisphaerica	436
Mammillaria heyderi var. heyderi	115
Mammillaria heyderi var. meiacantha	3
Mammillaria lasiacantha	17
Mammillaria longimamma var. sphaerica	8
Mammillaria pottsii	3
Mammillaria prolifera var. texana	45
Neolloydia intertexta var. intertexta	9
Neolloydia warnockii	6
Opuntia arenaria	1
Opuntia ficus-indica	19

Scientific Name	Number of Individuals
Opuntia humifusa var. humifusa	12
Opuntia imbricata var. imbricata	7
Opuntia kleiniae var. kleiniae	5
Opuntia leptocaulis	48
Opuntia lindheimeri var. lindheimeri	2
Opuntia lindheimeri var. linguiformis	78
Opuntia phaeacantha var. phaeacantha	2
Opuntia rufida	12
Opuntia schottii var. schottii	3
Opuntia tunicata var. tunicata	3
Opuntia violacea var. macrocentra	142
Opuntia violacea var. violacea	15
Thelocactus bicolor var. schottii	25

Table 3

Federally Listed and Category Texas Cacti Found in Nurseries

Scientific Name	Origin	# of Individuals
Ancistrocactus tobuschii	seed grown	6
Cereus greggii var. greggii	field collected	57
Coryphantha albicolumnaria	seed grown	2
Coryphantha hesteri	field collected	15
Coryphantha ramillosa	field collected	2
Echinocactus asterias	field collected	400
Echinocereus papillosus var. angusticeps	field collected	36
Echinocereus reichenbachii var. albertii	seed grown	15
Echinocereus reichenbachii var. fitchii	field collected	5005
Epithelantha bokei	field collected	25
Opuntia arenaria	grown from cutting	1
Opuntia lindheimeri var. linguiformis	grown from cutting	78
Thelocactus bicolor var. flavidispinus	seed grown	28

Table 4

Texas Nurseries and Dealers Offering Texas Cacti

County	Dealer
Bexar	Alamo City Cactus Lucy's Cactus
Cameron	Kay's
Culberson	Antonio & Barbara Rock & Cactus
Dallas	Palm Tree Nursery*
El Paso	A & L Nursery Desert Land Nursery Pearson's Tree Place
Harris	Herb Desert
Hidalgo	Cactus Land Flores Nursery Freeway Nursery Palm Tree Nursery*
Jeff Davis	High Country Nursery
Kinney	Bracketville Nursery
Midland	Enchanted Garden Lanham's Nursery Manning's Nursery
Parker	Springtown Nursery
Scurry	Snyder Nursery
Travis	Allamon's Nursery Living Desert
Webb	Gentry's Nursery
Zapata	Medina Nursery Mexican Joe Cactus Co.

*propagation only

TABLE 5

Catalogs Offering Texas Cacti

Abbey Garden Cacti & Succulents
4620 Carpinteria Ave.
Carpinteria, CA 93013

Aztekakti
11306 Gateway East
P. O. Box 26126
El Paso, TX 79926

Cactus by Dodie
934 E. Mettler Rd.
Lodi, CA 95242

Cactus Gem Nursery
10092 Mann Dr.
Cupertino, CA 95014

Cactus by Mueller
10411 Rosedale Hwy.
Bakersfield, CA 93312

California Cactus Growers Assn.
1701 S. Palm Canyon Dr.
Palm Springs, CA 92262

Desert Nursery
1301 S. Cooper
Deming, NM 88030

Desert Theatre
17 Behler Rd.
Watsonville, CA

EB Succulent Nursery
85-555 Wikolia Pl.
Walanae, HI 96792

Grigsby Cactus Gardens
2326 Bella Vista Dr.
Vista, CA 92084

Guy Wrinkle/Exotic Plants
11610 Addison St.
North Hollywood, CA 91601

Intermountain Cactus
2344 South Redwood Rd.
Salt Lake City, Utah 84119

K & L Cactus & Succulent Nursery
12712 Stockton Blvd.
Galt, CA 95632

Lauray of Salisbury
Route 41
Salisbury, CT 06068

Living Stones Nursery
2936 N. Stone
Tucson, AZ 85705

Lucy's Cactus
4114 Bloomdale
San Antonio, TX 78218

Mesa Garden
Box 72
Belen, NM 87002

Midwest Cactus Sales
P. O. Box 163
New Melle, MO 63365

Rainbow Gardens
1444 E. Taylor St.
Vista, CA 92084

Redlo Cacti, Inc.
2315 NW Circle Blvd. Dept. CSJ
Corvallis, OR 97330

Schulz Cactus Growers
1095 Easy St.
Morgan Hill, CA 95037

Shein's Cactus
3360 Drew St.
Marina, CA 93933

Singer's Growing Things
17806 Plummer St.
Northridge, CA 91325

Southwest Seeds
200 Spring Rd.
Kempston, Bedford
England MK42-8ND

Succulent Plants
3123 Pierce St. NE
Minneapolis, MN 55418

Table 6

Texas Cacti

Offered in Catalogs

	Abbey Garden Carpinteria, CA	Cactus By Dodie Lodi, CA	Cactus By Mueller Bakersfield, CA	Desert Nursery Deming, NM	Grigsby Cactus Gard Vista, CA	Intermountain Cactu Salt Lake City, UT	K & L Cactus Galt, CA	Lauray of Salisbury England	Living Stones Nurse Tucson, AZ	Mesa Garden Belen, NM	Midwest Cactus Sale New Melle, MO	Redlo Cacti Corvallis, OR	Sheins Cactus Marina, CA
Ancistrocactus scheeri									✓	2.25			
Ancistrocactus tobuschii										4.00			
Ancistrocactus uncinatus var. wrightii		✓		✓						2.00			
Ariocarpus fissuratus		✓		✓						4.00			
Cereus pentagonus			✓	✓									
Coryphantha albicolumnaria													2.50
Coryphantha cornifera var. echinus		✓	✓	✓					✓	2.00			
Coryphantha dasyacantha var. dasyacantha	✓	✓	✓							1.75			2.75
Coryphantha dasyacantha var. varicolor		✓		✓									
Coryphantha duncanii		✓											
Coryphantha hesteri		✓		✓	✓					✓			
Coryphantha macromeris var. macromeris		✓	✓						✓	2.00			
Coryphantha macromeris var. runyonii			✓	✓					✓	1.75			
Coryphantha minima	✓	✓								2.25		✓	
Coryphantha missouriensis var. caespitosa						✓				1.75			
Coryphantha ramillosa									✓	2.25		✓	
Coryphantha robertii				✓									
Coryphantha scheeri var. scheeri										2.00			
Coryphantha scheeri var. valida										1.75			
Coryphantha sneedii var. sneedii	✓	✓										✓	
Coryphantha strobiliformis var. strobiliformis		✓		✓								✓	
Coryphantha sulcata var. sulcata								✓	✓	2.00			

Table 6 (continued)

	Abbey Garden Carpinteria, CA	Cactus By Dodie Lodi, CA	Cactus By Mueller Bakersfield, CA	Desert Nursery Deming, NM	Grigsby Cactus Gar Vista, CA	Intermountain Cact Salt Lake City, UT	K & L Cactus Galt, CA	Lauray of Sali England	Living Stones Nurs Tucson, AZ	Mesa Garden Belen, NM	Midwest Cactus Sa New Melle, MO	Redlo Cacti Corvallis, OR	Sheins Cactus Marina, CA
Coryphantha vivipara var. radiosa				✓		✓				1.75			
Coryphantha vivipara var. vivipara				✓		✓				1.75			
Echinocactus asterias	✓	✓	✓		✓		2.50	✓		3.50		✓	
Echinocactus horizonthalonius var. horizonthalonius				✓						.60			
Echinocactus texensis	✓	✓		✓					✓				2.50
Echinocereus berlandieri		✓	✓	✓						1.00			
Echinocereus chloranthus var. chloranthus	✓	✓								2.00		✓	2.75
Echinocereus chloranthus var. cylindricus													
Echinocereus chloranthus var. neocapillus										2.00		✓	3.00
Echinocereus enneacanthus var. enneacanthus		✓		✓			25.00			.35			
Echinocereus enneacanthus var. stramineus		✓		✓						✓			
Echinocereus fendleri var. fendleri	✓									✓			2.75
Echinocereus fendleri var. rectispinus		✓										✓	
Echinocereus papillosus var. papillosus													2.75
Echinocereus pectinatus var. dasyacanthus				✓								✓	
Echinocereus pectinatus var. pectinatus		✓	✓	✓									
Echinocereus pectinatus var. weniqeri										✓			
Echinocereus pentalophus var. pentalophus	✓	✓	✓	✓			3.00			✓			
Echinocereus poselgeri		✓		✓						2.50		✓	
Echinocereus reichenbachii var. albispinus						✓							
Echinocereus reichenbachii var. fitchii		✓		✓						1.50			

Table 6 (continued)

	Abbey Garden Carpinteria, CA	Cactus By Dodie Lodi, CA	Cactus By Mueller Bakersfield, CA	Desert Nursery Deming, NM	Grigsby Cactus Garden Vista, CA	Intermountain Cactus Salt Lake City, UT	K & L Cactus Galt, CA	Lauray of Salisbury England	Living Stones Nursery Tucson, AZ	Mesa Garden Belen, NM	Midwest Cactus Sales New Melle, MO	Redlo Cacti Corvallis, OR	Sheins Cactus Marina, CA
Echinocereus reichenbachii var. perbellus	✓									1.50			
Echinocereus reichenbachii var. reichenbachii	✓		✓	✓		✓	4.75			2.50			
Echinocereus triglochidiatus var. melanacanthus						✓				✓			
Echinocereus triglochidiatus var. neomexicana				✓									
Echinocereus triglochidiatus var. paucispinus													
Echinocereus viridiflorus var. davisii	✓	✓			✓				✓	2.25		✓	
Echinocereus viridiflorus var. viridiflorus						✓			✓			✓	
Epithelantha bokei													
Epithelantha micromeris									✓	✓			
Ferocactus hamatacanthus var. hamatacanthus		✓		✓								✓	5.00
Ferocactus hamatacanthus var. sinuatus		✓		✓									
Ferocactus setispinus		✓	✓	✓									
Ferocactus wislizenii		✓					12.50						
Mammillaria heyderi var. hemisphaerica		✓											
Mammillaria heyderi var. heyderi		✓		✓						1.50		✓	
Mammillaria heyderi var. meiacantha		✓		✓									
Mammillaria lasiacantha	✓	✓		✓			3.50	✓	✓	3.00			2.50
Mammillaria longimamma var. sphaerica		✓	✓	✓			3.00					✓	✓
Mammillaria pottsii	✓			✓			3.00			2.00			
Mammillaria prolifera var. texana	✓				✓		2.50			1.50			✓
Mammillaria wrightii var. wrightii										2.00			

Table 6 (continued)

	Abbey Garden Carpinteria, CA	Cactus By Dodie Lodi, CA	Cactus By Mueller Bakersfield, CA	Desert Nursery Deming, NM	Grigsby Cactus Gar Vista, CA	Intermountain Cact Salt Lake City, U	K & L Cactus Galt, CA	Lauray of Sali England	Living Stones Nurs Tucson, AZ	Mesa Garden Belen, NM	Midwest Cactus Sa New Melle, MO	Redlo Cacti Corvallis, OR	Sheins Cactus Marina, CA
Neolloydia conoidea			✓	✓									
Neolloydia intertexta var. dasyacantha										2.50			
Neolloydia warnockii				✓									
Opuntia arenaria										2.50			
Opuntia atrispina										3.00			
Opuntia fragilis var. fragilis						✓					✓		
Opuntia humifusa var. humifusa						✓					✓		
Opuntia imbricata var. imbricata							2.00				✓		
Opuntia kleiniae var. kleiniae				✓							✓		
Opuntia leptocaulis			✓								✓		
Opuntia lindheimeri var. lindheimeri				✓									
Opuntia lindheimeri var. linguiformis			✓	✓			2.00			3.00			
Opuntia macrorhiza var. macrorhiza				✓		✓				3.00	✓		
Opuntia phaeacantha var. discata											✓		
Opuntia phaeacantha var. major											✓		
Opuntia phaeacantha var. phaeacantha						✓					✓		
Opuntia polyacantha var. polyacantha				✓		✓					✓		
Opuntia polyacantha var. rufispina											✓		
Opuntia rufida			✓	✓				✓					
Opuntia schottii var. grahamii				✓									
Opuntia schottii var. schottii				✓						2.00			

Table 6 (continued)

	Abbey Garden Carpinteria, CA	Cactus By Dodie Lodi, CA	Cactus By Mueller Bakersfield, CA	Desert Nursery Deming, NM	Grigsby Cactus Gardi Vista, CA	Intermountain Cactu Salt Lake City, UT	K & L Cactus Galt, CA	Lauray of Salis bury England	Living Stones Nurse Tucson, AZ	Mesa Garden Belen, NM	Midwest Caccus Sale New Melle, MO	Redlo Cacti Corvallis, OR	Sheins Cactus Marina, CA
Opuntia strigil var. strigil				✓									
Opuntia tunicata var. davisii				✓									
Opuntia tunicata var. tunicata				✓									
Opuntia violacea var. castetteri				✓									
Opuntia violacea var. santa-rita			✓				2.50						
Opuntia violacea var. violacea											✓		
Pediocactus papyracanthus					✓								
Thelocactus bicolor var. flavidispinus				✓		✓				1.75			
Thelocactus bicolor var. schottii		✓	✓	✓					✓	1.75			