



# A Summary of Biological Inventory Data Collected at Palo Alto Battlefield National Historical Park

## *Vertebrate and Vascular Plant Inventories*

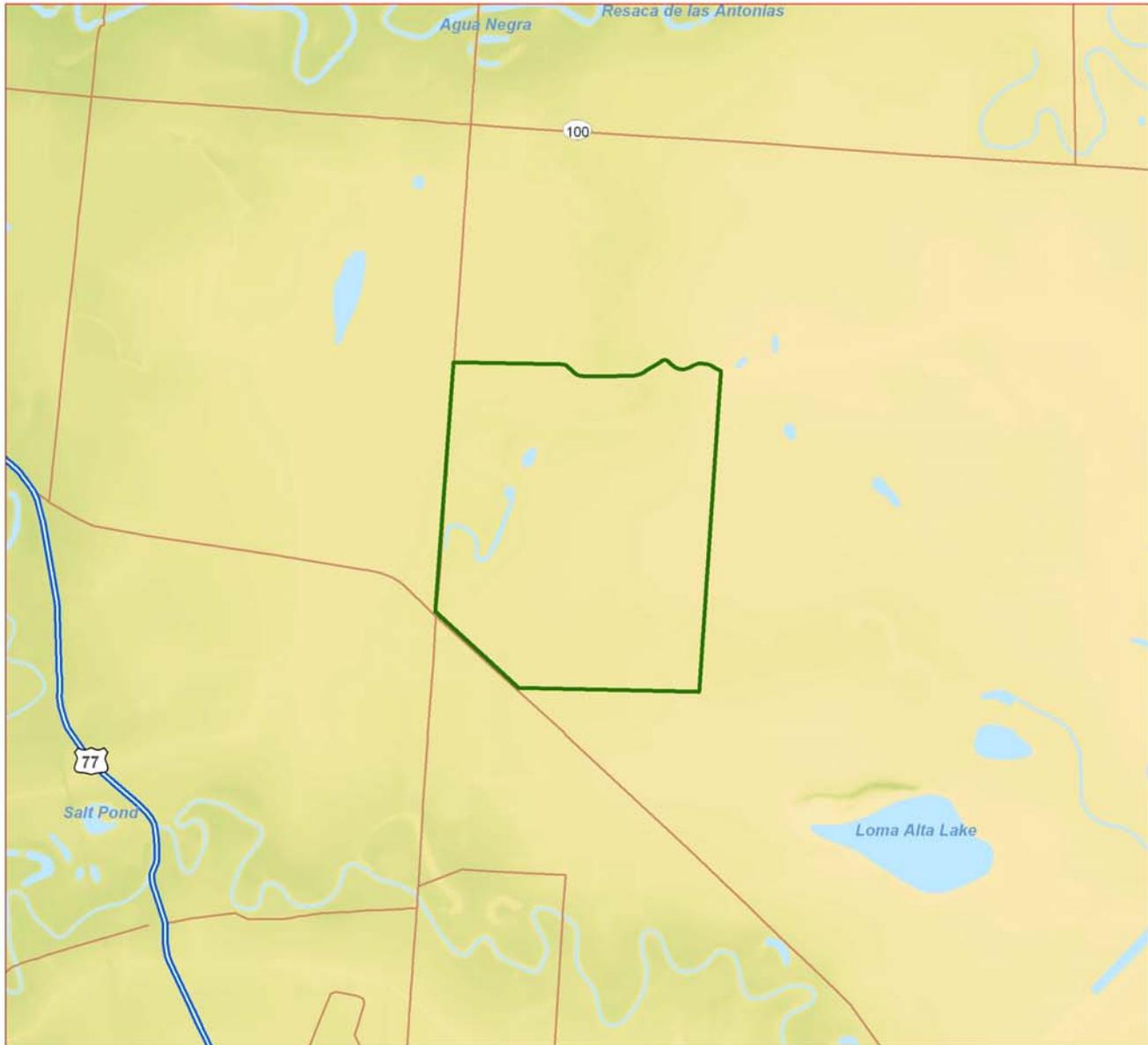
Natural Resource Technical Report NPS/GULN/NRTR—2010/401



Despite the general low relief, slight changes in elevation and soil salinity result in a variety of vegetation communities at PAAL. Where cattle have been excluded, the vegetation is thought to be very similar to the vegetation found in 1846, the time of the battle.



# Palo Alto Battlefield National Historical Site



Palo Alto Battlefield National Historical Park was established in 1960 to preserve the site of the first battle in the War between Mexico and the United States (1846-1848). The park lies within the delta of the Rio Grande, less than fifteen miles from the Gulf of Mexico. The region is generally flat and is dominated by coastal prairie interspersed with Tamaulipan brushland. Several noteworthy palustrine emergent wetlands are also found in the park. This is a reflection of Palo Alto's unique geographic location in south Texas, which provides favorable climate and habitat for a mixture of tropical and subtropical plants and animals, including several rare, threatened, and endangered species.



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The Texas horned lizard, *Phrynosoma cornutum*, are ideally suited for this dry climate.

Green racers, *Gonyosoma prasinum*, are common in PAAL.



The Texas tortoise, *Gopherus berlandieri*, are numerous at PAAL.

ON THE COVER Despite the general low relief, slight changes in elevation and soil salinity result in a variety of vegetation communities at PAAL. Where cattle have been excluded, the vegetation is thought to be very similar to the vegetation found in 1846, the time of the battle. The abundance of wildlife makes the Palo Alto Battlefield an attractive stopping point for nature lovers. The assortment of habitats supports a variety of animal life including tortoises and many other animals find refuge in the cover of brush.

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The National Park Service, Natural Resource Program Center publishes a range of reports that address natural resource topics of interest and applicability to a broad audience in the National Park Service and others in natural resource management, including scientists, conservation and environmental constituencies, and the public.

The Natural Resource Data Series is intended for the timely release of basic data sets and data summaries. Care has been taken to assure accuracy of raw data values, but a thorough analysis and interpretation of the data has not been completed. Consequently, the initial analyses of data in this report are provisional and subject to change.

All manuscripts in the series receive the appropriate level of peer review to ensure that the information is scientifically credible, technically accurate, appropriately written for the intended audience, and designed and published in a professional manner.

Views, statements, findings, conclusions, recommendations, and data in this report do not necessarily reflect views and policies of the National Park Service, U.S. Department of the Interior. Mention of trade names or commercial products does not constitute endorsement or recommendation for use by the U.S. Government.

This report is available from [the Gulf Coast Network Inventory and Monitoring Program website: http://science.nature.nps.gov/im/units/guln/networkhome/reports.cfm](http://science.nature.nps.gov/im/units/guln/networkhome/reports.cfm) and the Natural Resource Publications Management website (<http://www.nature.nps.gov/publications/NRPM>).

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## Introduction

Park managers are directed by federal law and National Park Service (NPS) policies to know the status and trends in the condition of natural resources under their stewardship in order to fulfill the NPS mission of conserving parks unimpaired. The National Park Service established the Inventory and Monitoring Program (I&M) in 1992 to provide funding, technical assistance, and coordination for more than 270 parks to complete 12 basic natural resource inventories and to begin monitoring the status and trend of park natural resources. As part of this effort, the I&M Program's Gulf Coast Network (GULN) completed several inventories of the vertebrate species and vascular plants at Palo Alto Battlefield National Historical Park (PAAL).

These efforts included cataloging all existing data, followed up by additional field investigations. The primary purpose of these inventories was to document the presence of resources in parks, and to assess and document the current condition and knowledge of natural resources in the parks. This report provides a summary of results. Results are also briefly discussed within the context of future inventory efforts, long-term monitoring, and management.

A natural resource **inventory** is an extensive point-in-time effort to document the presence, location or condition of a resource, including the status of plants, animals, and abiotic components such as water, soils, landforms, and climate. **Monitoring** differs from an inventory in adding the dimension of time, with the general purpose of detecting changes or trends in a resource over time.

## Methods

Prior to the initiation of any field investigation, an effort was made to assemble extant data on species occurrence at PAAL. This included searches of reference databases and vouchers, as well as a site visit to the park. Based on these investigations, inventories for several vertebrate and vascular plant groups at PAAL were determined to be incomplete or had never been done. Consequently, new field inventories of fish (Hays 2004), birds (Hays 2004), mammals (Hays 2004), amphibians and reptiles (Duran 2004), and vascular plants (Lonard 2004) were conducted on the park.

NPSpecies is the National Park Service's master database for documenting the occurrence and status of species in more than 270 national park units containing significant natural resources.

Data gathered from the initial reviews at PAAL and recent inventories were organized and entered in NPSpecies. Organism names were linked to the available evidence (reference, observation and/or voucher), quality checked, and made ready for review by individuals with expertise in the various taxa groups. The purpose of these reviews was to assign a park status (e.g., Present in Park, Probably Present, False Report, etc.) and complete a series of checklist fields for each organism (i.e., abundance, residency, nativity and cultivation). Upon completion of this step, data were considered certified and uploaded to a master, online version of NPSpecies on the NPS resource management application website (<http://NRInfo.gov>). This site

Recent inventory reports for PAAL are available on the GULN website at <http://science.nature.nps.gov/im/units/guln/>.

is currently restricted to NPS users and contractors, and records flagged as "sensitive" are not visible to users without edit permissions.

## Results and Discussion

Searches for past data and completion of recent inventory efforts resulted in 10 references, 22 vouchers, and 731 observations being entered into NPSpecies for PAAL. Based on a review of this evidence, 443 organisms were categorized as Present in Park or Probably Present (Table 1). An additional 4 organisms were categorized as Unconfirmed or Encroaching. Unconfirmed organisms were included on the park list primarily due to historic and/or weak evidence supporting its existence on the park. Encroaching species includes those organisms known to occur in the region, but that are unlikely to occur on the park, at least presently.

Currently 397 of the parks total 447 organisms are documented as Present in Park. Additionally, the percentage of total organisms Present in Park is 89%. However, if both categories, Present in Park and Probably Present are combined, then the number of documented organisms rises to 443. The percentage of Present in Park and Probably Present of total organisms is 99%. Thus, based on current data, the percentage of documented organisms occurring in PAAL is likely between 89 and 99%. The I&M goal was to document as many organisms occurring in the park as possible, be them previously unidentified, encroaching, possibly present, or Present in Park. .

**Table 1.** Count of organisms by Park Status categories at PAAL (NPSpecies 2009).

Park Status <sup>1</sup>	Bird	Fish	Mammal	Amphibian	Reptile	Vascular Plant	Total
Present in Park	68	10	15	7	21	276	<b>397</b>
Probably Present	40	-	3	2	1	-	<b>46</b>
Encroaching	1	-	1	-	-	-	<b>2</b>
Unconfirmed	-	-	-	-	2	-	<b>2</b>
Historical	-	-	-	-	-	-	<b>0</b>
False Report	-	-	-	-	-	-	<b>0</b>

<sup>1</sup>Refer to Appendix A for definitions of Park Status categories.

Of the 447 organisms documented, reviewers assigned a general abundance category (e.g. Abundant, Common, Uncommon, Rare, and Occasional) to 134 (30%) (Table 2). Reviewers believed additional information was needed before an abundance category could be assigned to the remaining 313 (70%) organisms (e.g. Unknown, Not Accounted for).

**Table 2.** Count of organisms by Abundance categories at PAAL (NPSpecies 2009).

<b>Abundance Category<sup>1</sup></b>	<b>Bird</b>	<b>Fish</b>	<b>Mammal</b>	<b>Amphibian</b>	<b>Reptile</b>	<b>Vascular Plant</b>	<b>Total</b>
Abundant	6	-	1	2	3	2	14
Common	33	-	9	3	9	2	56
Uncommon	25	-	4	1	3	7	40
Rare	4	-	-	1	1	1	7
Occasional	-	-	1	-	5	11	17
Unknown	-	10	-	-	-	253	263
Not Accounted for	41	-	4	2	3	-	50

<sup>1</sup> Refer to Appendix A for definitions of Abundance categories.

Residency values (e.g. Breeder, Resident, Migrant, and Vagrant) were assigned for 82 organisms with the exception of 365 organisms that were categorized as unknown or not accounted for (42 birds, 9 fish, 5 mammals, 9 amphibians, and 24 reptiles). Unknown and Not Accounted For residency values were assigned primarily because it was unknown as to whether or not the organism bred on the park. Also, residency was not established for the 276 vascular plants because residency values do not apply to vascular plants.

**Table 3.** Count of organisms by Residency categories at PAAL (NPSpecies 2009)

<b>Residency Category<sup>1</sup></b>	<b>Bird</b>	<b>Fish</b>	<b>Mammal</b>	<b>Amphibian</b>	<b>Reptile</b>	<b>Vascular Plant</b>	<b>Total</b>
Breeder	2	-	5	-	-	-	7
Resident	53	-	9	-	-	-	62
Migratory	12	-	-	-	-	-	12
Vagrant	-	1	-	-	-	-	1
Unknown	1	9	1	7	21	-	39
Not Accounted for	41	-	4	2	3	276	326

<sup>1</sup> Refer to Appendix A for definitions of Residency categories.

PAAL's local list includes 139 non-native organisms (i.e., 13% of total). Of the 20 non-native organisms, there is one bird, 4 are mammals, and the remaining 15 are vascular plants. One additional bird and ten additional fish were assigned a nativity of unknown due to a park status of unconfirmed and false reports regarding this bird and these fish. At the time of the latest inventory, (Hays 2004) there was no water in the resacas so fish abundance could not be assessed.

**Table 4.** Count of organisms by Nativity categories at PAAL (NPSpecies 2009)

<b>Nativity Category<sup>1</sup></b>	<b>Bird</b>	<b>Fish</b>	<b>Mammal</b>	<b>Amphibian</b>	<b>Reptile</b>	<b>Vascular Plant</b>	<b>Total</b>
Native	107	-	15	9	24	258	413
Non-Native	1	-	4	-	-	15	20
Unknown	1	10	-	-	-	3	14
Not Accounted for	-	-	-	-	-	-	-

<sup>1</sup> Refer to Appendix A for definitions of Nativity categories.

NatureServe, in cooperation with The Nature Conservancy and NPS, developed a protocol to rank the impact of non-native invasive vascular plants (Morse et al. 2004). Through a series of

standardized questions, non-native species are evaluated and assigned an Invasive Species Impact Rank (I-Rank) based on impact to native species and natural biodiversity. I-Ranks are categorized as high, high/medium, high/low, medium, medium/low, medium/insignificant, low, low/insignificant, or insignificant. Five of the fifteen non-native vascular plants on PAAL's local list received an overall I-Rank score from NatureServe (Table 5). Only two of the fifteen species listed received an Overall I-Rank containing a High rating. All are known to occur in the park (i.e., Present in Park).

**Table 5.** Non-native plants occurring at Palo Alto Battlefield National Historic Park with an Invasive Species Impact Rank (I-Rank) NatureServe 2009.

Common Names	Species	Overall I-Rank	Ecological Impact <sup>1</sup>	Management Difficulty <sup>2</sup>	I-Rank Summary
buffelgrass	<i>Pennisetum ciliare</i>	High	High	High/Low	This hardy non-native grass has a high degree of reproductive vigor, a wide range of adaptability, and few pests and predators. It occurs in 15 states in the US, mostly in the southeast. It is difficult to manage once firmly established.
aleppo milletgrass, herbe de Cuba, Johnson grass, Johnsongrass, sorgho d'Alep, sorgho de alepo, zacate Johnson	<i>Sorghum halepense</i>	High/Medium	Medium/Low	High/Medium	Johnson grass has been shown to severely inhibit pioneer grass species which normally appear in abandoned fields and can persist in almost pure stands for many years. The massive size (up to 3 m tall) of this plant creates difficulties for the establishment of other plants and rapid growth of rhizomes also provides the plant with a competitive edge over other species. It is one of the most frequently listed noxious weeds in the U.S. and occurs throughout the entire southern half of the country. The plant is self-pollinated, aggressive, and wind dispersed though humans often disperse it during field cultivation. Although it can colonize undisturbed sites as a pioneer species, it is often found in old fields or previously cultivated areas. Control is difficult and costly and, although some selective herbicides have been developed, such treatment usually impacts natives.

Common Names	Species	Overall I-Rank	Ecological Impact <sup>1</sup>	Management Difficulty <sup>2</sup>	I-Rank Summary
London rocket, Londonrocket, rocketmustard	<i>Sisymbrium irio</i>	Medium/Insignificant	Medium/Low	Unknown	<i>Sisymbrium irio</i> , London rocket or London mustard, is a member of the Cruciferae and is in a few northeastern states, is present in only two states in the southeast, and is sometimes abundant in the southwest. This species appears to be most problematic in the Sonoran Desert and the Mojave Desert. It documented in the federally listed, Gopher Tortoise's habitat, in the Mojave desert, and outcompetes native plant species there. This mustard species may also indirectly affect the nutrient intake of this rare tortoise by displacing native plant species containing nutrients the tortoises require. This species tends to occur in disturbed places in most of its range, except in the desert, and doesn't appear to be aggressive invader of most natural areas. With that said, it does seem to be spreading in the southwest. Finally, this species produces a large number of seeds which aids its ability to spread in the southwest.
pimpernel, scarlet pimpernel	<i>Anagallis arvensis</i>	Medium/Insignificant	Medium/Insignificant	Medium/Insignificant	This common weed appears to be so ubiquitous that no one notices it anymore. It is unlikely to be affecting ecosystems, communities or individual species.
Bermudagrass, chiendent pied-de-poule, common bermudagrass, devilgrass, grama-seda, manienie, motie molulu	<i>Cynodon dactylon</i>	Medium/Low	Medium/Low	High/Medium	A circumglobal species, <i>Cynodon dactylon</i> is limited in distribution in the US to areas with warm temperatures. Locally able to invade disturbed sites, areas with persistent native vegetation are probably not under threat by this taxon.

<sup>1</sup> A subcategory of Overall I-Rank score that addresses organism's negative impacts on native plant and animal populations and communities.

<sup>2</sup> A subcategory of Overall I-Rank score that addresses difficulty of control.

If information (as evidenced by protocol questions answered) is sufficient to eliminate at least two of the four possible I-Ranks, but insufficient to narrow the I-Rank to a single value, a range I-Rank (e.g. High/Medium) is assigned.

A total of 17 organisms (Table 6) on PAAL’s local list currently meet at least one of the following criteria:

- Listed on Texas Parks and Wildlife Department (TPWD) list of rare biota. (<http://www.tpwd.state.tx.us/>)
- Listed by the U.S. Fish and Wildlife Service under the auspices of the U.S. Endangered Species Act of 1973, as amended.
- Ranked as Critically Imperiled or Imperiled at the global level by NatureServe and its network of member programs.

**Table 6.** Organisms on the park’s local list which possess a designated conservation status (State Status, State Rank, Federal Status or TNC Global Rank)

Common Name	Scientific Name	Park Status <sup>1</sup>	State Status <sup>2</sup>	State Rank <sup>3</sup>	Federal Status <sup>4</sup>	TNC Global Rank <sup>5</sup>
<b>BIRDS</b>						
White-tailed Hawk	<i>Buteo albicaudatus</i>	Probably Present	T	S4B		G4G5
Reddish Egret	<i>Egretta rufescens</i>	Encroaching	T	S3B		G4
Wood Stork	<i>Mycteria americana</i>	Probably Present	T	S4B		G5
Northern Aplomado Falcon	<i>Falco femoralis septentrionalis</i>	Historic	E	S1	E	G4T2
Plegadis chihi	<i>Plegadis chihi</i>	Probably Present	T	S3		G5
Texas Botteri's Sparrow	<i>Aimophila botterii texana</i>	Present in Park	T	S3B		G4T4
Brownsville Common Yellowthroat	<i>Geothlypis trichas insperata</i>	Present in Park		S1B		G5T2
<b>MAMMALS</b>						
Nilgai	<i>Boselaphus tragocamelus</i>	Present in Park				G3G4
<b>REPTILES</b>						
Black-striped Snake	<i>Coniophanes imperialis</i>	Probably Present	T	S2		G4G5
Texas Horned Lizard	<i>Phrynosoma cornutum</i>	Present in Park	T	S4		G4G5
Texas Tortoise	<i>Gopherus berlandieri</i>	Present in Park	T	S3		G4
<b>VASCULAR PLANTS</b>						
Bailey's Ball-moss	<i>Tillandsia baileyi</i>	Present in Park		S2		G2G3

Common Name	Scientific Name	Park Status <sup>1</sup>	State Status <sup>2</sup>	State Rank <sup>3</sup>	Federal Status <sup>4</sup>	TNC Global Rank <sup>5</sup>
Little-flower Spiderwort	<i>Callisia micrantha</i>	Present in Park		S3		G3
Rio Grande Spikerush	<i>Eleocharis austrotexana</i>	Present in Park		S3		G3
Texas Stonecrop	<i>Lenophyllum texanum</i>	Present in Park		S3		G3
Gulf Coast Wolfberry	<i>Lycium carolinianum var. quadrifidum</i>	Present in Park		S3		G4T2T4
<b>AMPHIBIAN</b>						
Mexican Treefrog	<i>Smilisca baudinii</i>	Present in Park	T	S3		G5

<sup>1</sup> Refer to the Appendix for definitions of Park Status categories.

<sup>2</sup> The official endangerment status the state heritage program has assigned to this species.

**T** – Threatened : Any species or subspecies that is likely to become an endangered species within the foreseeable future.

**E** – Endangered : Animal: Any species or subspecies of wildlife whose prospects of survival or recruitment within the state are in jeopardy or are likely to become so within the foreseeable future.

**LE** – endangered : A species which is in danger of extinction throughout all or a significant portion of its range.

**D** - Deemed in Need of Management : Any species or subspecies of nongame wildlife which should be investigated in order to develop information relating to populations, distribution, habitat needs, limiting factors, and other biological and ecological data to determine management measures necessary for their continued ability to sustain themselves successfully.

**SP** - Species Protected : It shall be unlawful to take, capture, kill, or attempt to take, capture or kill; possess, sell, trade for anything of monetary value, or offer to sell or trade for anything of monetary value, the following nongame wildlife species (or any parts or reproductive products of such species) without a scientific collection permit or written permit from the Commissioner, Department of Conservation and Natural Resources, which shall specifically state what the permittee may do with regard to said species.

**S** - Special concern : any species or subspecies that is uncommon, or has unique or highly specific habitat requirements or scientific value and therefore requires careful monitoring of its status.

<sup>3</sup> State Rank

**S1**– Extremely rare and critically imperiled in the state with five or fewer occurrences, or very few remaining individuals, or because of some special condition where the species is particularly vulnerable to extirpation.

**S2**– Very rare and imperiled within the state, six to twenty occurrences and less than 3000 individuals, or few remaining individuals, or because of some factor(s) making it vulnerable to extirpation.

**S3**– Rare and uncommon in the state, from 21 to 100 occurrences.

**S4**– Widespread, abundant, and apparently secure within the state, though it may be quite rare in parts of its range, especially at the periphery, and is of long-term concern.

**SH**– Of historical occurrence, i.e., known to occur in the past, with the expectation that it may be rediscovered.

<sup>4</sup>U.S. Endangered Species Act: Current status of the taxon as designated or proposed by the U.S. Fish and Wildlife Service (USFWS) or the U.S. National Marine Fisheries Service, and as reported in the U.S. Federal Register in accordance with the U.S. Endangered Species Act of 1973, as amended.

**E– Listed endangered**, denotes a taxon that is threatened by extinction throughout all or a significant portion of its range.

**T– Listed threatened**, denotes a taxon that is likely to become an endangered species in the foreseeable future.

**DM– Delisted taxon**, recovered, being monitored for first five years.

<sup>5</sup>The rounded NatureServe conservation status, developed by NatureServe and its network of member programs, of a species from a global (i.e., rangewide) perspective, characterizing the relative imperilment of the species. G1=Critically Imperiled, G2=Imperiled, G3=Vulnerable, G4=Apparently Secure, G5=Secure. Refer to <<http://www.natureserve.org/explorer/ranking.htm>> for additional information on ranks.

## Discussion

It is recognized that a species list will never be 100% complete and accurate any given time. Because most inventories are “point in time” surveys, not every species present may be found during the inventory. However, these new inventories, combined with historical observations give a reasonably complete list of species currently found on the park. In addition, the inventories resulted in the documentation of many new species and will provide baseline information that may of management significance.

The inventory conducted by Accipiter Biological Consultants (Hays 2004) resulted in a total of 68 bird species, 14 mammal species and no fish species on the Palo Alto Battlefield National Historic Park. In reviewing the previous studies by Richards and Richardson (1993) and Farmer (1992) an additional 42 bird species, 4 mammal species and 10 fish species were added to the annotated list by virtue of having been observed on the Park. In addition, the federal listed Aplomado falcon was sighted within park boundaries.

The plant inventory conducted by Lonard (2004) found several introduced and potentially invasive grasses throughout the park. These include *Dichanthium annulatum*, *Dichanthium aristatum*, *Pennisetum, ciliare*, *Urochloa maxima*, and *Urchloa panicoides*. These plants mainly occur withing disturbed sites and along roads and trails (Lonard 2004). No rare, threatened, or endangered species were documented.

The amphibian and reptile conducted by Texas Nature Conservancy (Duran 2004) found several species with special conservation status were detected and several other such species should be present if wetter conditions persist. Species with special conservation status that were detected via direct observation were the Texas tortoise, the Mexican tree frog, the Texas indigo snake, and the Texas horned lizard. The sheep frog, the black-striped snake, the Rio Grande siren, and the black-spotted newt are all likely to occur at PAAL under wetter conditions.

While significant strides have been made in documenting the presence of vertebrate species and vascular plants (as noted above), it is anticipated that additional survey efforts may result in an increase in the number of organisms documented on PAAL.

## Monitoring

GULN’s current list of high priority vital signs to be monitored at PAAL includes several that related directly to the vascular plant and vertebrate species documented in these recent inventories. These include terrestrial vegetative communities, Texas tortoise communities, and water quality. Water quality relates directly to the vegetative communities, amphibians, and fish communities. Although the fish communities are not included in the list of vital signs currently

under development, water quality data collected by the park staff will provide important information about the hydrology of the park.

The potential impact of climate change on park resources has recently become a focus for the National Park Service. Although the impacts are difficult to predict, all of the vital signs that will be monitored at PAAL are very sensitive to changes in precipitation (timing, amount, and/or frequency) and temperature. The GULN will compile available weather data to use for placing monitoring results in context of changing weather and climate.

## **Management**

Recent inventories have revealed that PAAL supports a diverse array of vascular plants and vertebrates. As noted, the data have been consolidated into NPSpecies for use in park planning and management decisions. An additional step to be taken with these data is identification of management priority species. This would likely include sensitive or rare species, and highly invasive exotics, among others. Additional management recommendations can be found in the specific inventory reports for PAAL.

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## NPSpecies

<https://science1.nature.nps.gov/npspecies/web/main/start>  
Feb 4, 2009

## Appendix A. NPSpecies Data Dictionary

Park Status	The current status of each species in each park.	Applicable only to organisms with the <i>Local List</i> checkbox checked. The possible values reflect a combination of confidence, and availability and currency of verifiable evidence in NPSpecies.
Present in Park	Species' occurrence in park is documented and assumed to be extant.	Extremely high confidence that the species is currently in the park. A current, verifiable reference, voucher or observation is included in NPSpecies.
Probably Present	Park is within species' range and contains appropriate habitat. Documented occurrences of the species in the adjoining region of the park give reason to suspect that it probably occurs within the park. The degree of probability may vary within this category, including species that range from common to rare.	Very high confidence that the organism is currently in the park. Verifiable evidence may exist in NPSpecies, but is not considered current enough to elevate the status to Present in Park. Efforts should be made to obtain current, verifiable evidence in NPSpecies to elevate the Park Status to "Present in Park". If reasonable efforts to obtain current, verifiable evidence are unsuccessful, then the Park Status should be changed to Unconfirmed, Historic, Encroaching or False Report as applicable.
Unconfirmed	Included for the park based on weak ("unconfirmed record") or no evidence, giving minimal indication of the species' occurrence in the park.	Any confidence from very low to high that the organism is currently in the park. Verifiable evidence may exist in NPSpecies, but it is not considered sufficient enough to elevate the status to Probably Present, nor current enough to elevate the status to Present. Efforts should be made to obtain current, verifiable evidence in NPSpecies to elevate the Park Status to "Present in Park". If reasonable efforts to obtain current, verifiable evidence are unsuccessful, then the Park Status should be changed to Historic, Encroaching or False Report as applicable.
Encroaching	The species is not documented in the park, but is documented as being adjacent to the park and has potential to occur in the park.	Extremely low confidence that the organism is currently in the park, but extremely high confidence that the organism is currently adjacent to the park. Verifiable evidence may exist in NPSpecies documenting the occurrence in the park, but it is not current. Potential invasive organisms are good candidates for this Park Status designation, either before they enter a park or after they have been eliminated from a park.
Historic	Species' historical occurrence in the park is documented, but recent investigations indicate that the species is now probably absent.	Extremely low confidence that the organism is currently in the park. Verifiable evidence exists in NPSpecies, but is not current. Extinct, extirpated or eliminated species are candidates for a Historic <i>Park Status</i> designation.
False Report	Species previously reported to occur within the park, but current evidence indicates that the report was based on a misidentification, a taxonomic concept no longer accepted, or some other similar problem of interpretation.	Extremely low confidence that the organism is currently in the park. Evidence exists in NPSpecies, but it cannot be sufficiently verified.

NA	Not Applicable - Park-Status does not apply to the scientific name for the park.	<p>The NA value prevents null values from appearing in NPSpecies and applies to 2 primary situations:</p> <ol style="list-style-type: none"> <li>1) An outdated scientific name that is not used in the locale of the park for an organism, but is in NPSpecies for a park because of the inclusion of vouchers, observations or names linked to references. Note that outdated names are reconciled in NPSpecies with the LOCAL CLASSIFICATION system.</li> <li>2) Vouchers, observations or names linked to references have not been identified at the species level or lower, but are included in NPSpecies with the name of a higher taxonomic rank than the species level. The names of these higher level taxonomic ranks will disappear from NPSpecies if the evidence of the respective name are identified to the species level or lower, and are changed appropriately in NPSpecies.</li> </ol>
<b>Abundance</b>	The current abundance of each organism in each park.	Applicable only to organisms with the <i>Local List</i> checkbox checked and a <i>Park Status</i> of "Present". The values attempt to balance abundance with suitable habitat, and temporal/behavioral considerations. In practice, the entered value should apply (although there are numerous exceptions) to the abundance in the most suitable habitat of the organism, and at the time that the organism is engaged in it's principle behavior in (e.g. breeding, migrating, hibernating, etc.), or most important behavior to, the park. A future generation of NPSpecies will address the coding of <i>Abundance</i> (and associated <i>Residency</i> ) to separate out the temporal and behavioral aspects. The Data Source field for Abundance is available to provide a citation that specifically addresses abundance in more detail.
Abundant	<p><b>Animals:</b> May be seen daily, in suitable habitat and season, and counted in relatively large numbers.</p> <p><b>Plants:</b> Large number of individuals; wide ecological amplitude or occurring in habitats covering a large portion of the park.</p>	
Common	<p><b>Animals:</b> May be seen daily, in suitable habitat and season, but not in large numbers. <b>Plants:</b> Large numbers of individuals predictably occurring in commonly encountered habitats but not those covering a large portion of the park.</p>	
Uncommon	<p><b>Animals:</b> Likely to be seen monthly in appropriate season/habitat. May be locally common. <b>Plants:</b> Few to moderate numbers of individuals; occurring either sporadically in commonly encountered habitats or in uncommon habitats.</p>	

Rare	<b>Animals:</b> Present, but usually seen only a few times each year. <b>Plants:</b> Few individuals, usually restricted to small areas of rare habitat.	
Occasional	<b>Animals:</b> Occurs in the park at least once every few years, but not necessarily every year. <b>Plants:</b> Not applicable.	
Unknown	Abundance unknown.	
NA	Not Applicable – Abundance does not apply to the scientific name in the park.	All names on a park's list that do not have a <i>Park Status</i> of Present should have a <i>Residency</i> of NA.
<b>Residency</b>	Current residency classification for each ANIMAL species in each park.	Applicable only to ANIMALS with the <i>Local List</i> checkbox checked and a <i>Park Status</i> of "Present". The values attempt to balance temporal and behavioral considerations. In practice, the entered value should apply (although there are numerous exceptions) to the residency of the organism at the time that the organism is engaged in its principle behavior (e.g. breeding, migrating, hibernating, etc.) in, or most important behavior to, the park. A future generation of NPSpecies will address the coding of Residency (and associated Abundance) to separate out the temporal and behavior aspects. The Data Source field for Residency is available to provide a citation that specifically addresses Residency in more detail.
Breeder	Population reproduces in the park.	
Resident	A significant population is maintained in the park for more than two months each year, but it is not known to breed there.	
Migratory	Migratory species that occurs in park approximately two months or less each year and does not breed there.	
Vagrant	Park is outside of the species' usual range.	
Unknown	Residency status in park is unknown.	
NA	Not Applicable – Residency does not apply to the scientific name in the park.	All names on a park's list that do not have a <i>Park Status</i> of Present should have a <i>Residency</i> of NA.
<b>Nativity</b>	Nativity classification for each organism for each park.	Applicable only to organisms with the <i>Local List</i> checkbox checked. If the park-status of an organism is not "Present in Park", then nativity represents the nativity if the organism were eventually confirmed in the park.
Native	The organism is native, or would be native, to the park (either endemic or indigenous).	
Non-Native	The organism is not native, or would not be native, to the park (neither endemic nor indigenous).	Cultivated organisms as defined under the <i>Cultivation</i> field are also considered non-native.
Unknown	Nativity is unknown relative to the park.	
NA	Not Applicable	Applies to names that do not represent organism names for the locale of the park.

<b>Cultivation</b>	Cultivation classification for each non-native organism in each park.	Applicable only to organisms with the <i>Local List</i> checkbox checked, a <i>Park Status</i> of "Present" or "Probably Present" and a <i>Nativity</i> of Non-Native. Cultivation is intended to distinguish between non-native organisms that were introduced as part of a park's mission, and non-native organisms that occur in the park naturally. Cultivation was not intended to apply to organisms that are cultivated for landscape purposes and have not persisted into the natural environment, for example plants in gardens or terrariums, or animals in enclosures. In general, NPSpecies was not intended to include controlled, "domestic" organisms.
Cultivated	A non-native species that is currently cultivated in the park.	
Persistent	A non-native species that persists in the park (either reproducing or non-reproducing) from a previous cultivation in the park.	
Not Cultivated	A non-native species that is not currently cultivated in the park.	
Unknown	A non-native species for which the cultivation in the park is currently unknown.	
NA	Not Applicable – Cultivation does not apply to the non-native scientific name in the park.	All names on a park's list that do not have a <i>Park Status</i> of Present or Probably Present and a <i>Nativity</i> of Non-native should have a Cultivation of NA.

## Appendix B. PaloAlto Battlefield National Historic Park (PAAL) Local List (NPSpecies 12/15/2009).

Scientific Name	Common Name	Park Status1
<b>Amphibians</b>		
<i>Bufo nebulifer</i>	Gulf Coast Toad	PIP
<i>Pseudacris clarkii</i>	Spotted Chorus Frog	PIP
<i>Smilisca baudinii</i>	Mexican Smilisca, Mexican Treefrog	PIP
<i>Gastrophryne olivacea</i>	Great Plains Narrow-mouthed Toad, Western Narrow-mouthed Toad	PIP
<i>Rana berlandieri</i>	Rio Grande Frog, Rio Grande Leopard Frog	PIP
<i>Scaphiopus couchii</i>	Couch's Spadefoot	PIP
<i>Siren intermedia</i>	Lesser Siren	PP
Scientific Name	Common Name	Park Status1
<b>Birds</b>		
<i>Anas americana</i>	American Wigeon	PP
<i>Anas discors</i>	Blue-winged Teal	PIP
<i>Anas fulvigula</i>	Mottled Duck	PP
<i>Lophodytes cucullatus</i>	Hooded Merganser	PP
<i>Dendrocygna autumnalis</i>	Black-bellied Whistling-Duck	PIP
<i>Buteo albicaudatus</i>	White-tailed Hawk	PP
<i>Buteo jamaicensis</i>	Red-tailed Hawk	PIP
<i>Buteo regalis</i>	Ferruginous Hawk	PP
<i>Buteo swainsoni</i>	Swainson's Hawk	PP
<i>Circus cyaneus</i>	Northern Harrier	PIP
<i>Elanus leucurus</i>	White-tailed Kite	PIP
<i>Parabuteo unicinctus</i>	Harris' Hawk	PIP
<i>Ardea alba</i>	Great egret	PIP
<i>Ardea herodias</i>	Great Blue Heron	PIP
<i>Bubulcus ibis</i>	Cattle Egret	PIP
<i>Egretta caerulea</i>	Little Blue Heron	PP
<i>Egretta rufescens</i>	Reddish Egret	E
<i>Egretta thula</i>	Snowy Egret	PP
<i>Egretta tricolor</i>	Tricolored Heron	PP
<i>Nyctanassa violacea</i>	Yellow-crowned Night-Heron	PIP
<i>Charadrius vociferus</i>	Killdeer	PIP

<i>Charadrius wilsonia</i>	Wilson's Plover	PP
<i>Himantopus mexicanus</i>	Ae'o, Black-necked Stilt, Hawaiian Stilt	PIP
<i>Cathartes aura</i>	Turkey Vulture	PIP
<i>Mycteria americana</i>	Wood Stork	PP
<i>Caracara plancus</i>	Southern Caracara	PP
<i>Falco columbarius</i>	Merlin	PP
<i>Falco femoralis</i>	Aplomado Falcon	PIP
<i>Falco sparverius</i>	American Kestrel	PIP
<i>Larus argentatus</i>	Herring Gull	PIP
<i>Larus atricilla</i>	Laughing Gull	PIP
<i>Larus delawarensis</i>	Ring-billed Gull	PIP
<i>Sterna antillarum</i>	Least Tern	PP
<i>Phalacrocorax auritus</i>	Double-crested Cormorant	PP
<i>Podilymbus podiceps</i>	Pied-billed Grebe	PP
<i>Tachybaptus dominicus</i>	Least Grebe	PP
<i>Calidris bairdii</i>	Baird's Sandpiper	PIP
<i>Catoptrophorus semipalmatus</i>	Willet	PIP
<i>Numenius americanus</i>	Long-billed Curlew	PIP
<i>Tringa flavipes</i>	Lesser Yellowlegs	PP
<i>Tringa melanoleuca</i>	Greater Yellowlegs	PIP
<i>Eudocimus albus</i>	White Ibis	PP
<i>Plegadis chihi</i>	White faced Ibis	PP
<i>Columbina passerina</i>	Common Ground-Dove	PIP
<i>Leptotila verreauxi</i>	White-tipped Dove	PP
<i>Zenaida asiatica</i>	White-winged Dove	PP
<i>Zenaida macroura</i>	Mourning Dove	PIP
<i>Ceryle torquata</i>	Ringed Kingfisher	PIP
<i>Ortalis vetula</i>	Plain Chachalaca	PIP
<i>Crotophaga sulcirostris</i>	Groove-billed Ani	PIP
<i>Geococcyx californianus</i>	Greater Roadrunner	PP
<i>Colinus virginianus</i>	Northern Bobwhite	PIP
<i>Rallus elegans</i>	King Rail	PP
<i>Rallus longirostris</i>	Clapper Rail	PP
<i>Eremophila alpestris</i>	Horned Lark	PP
<i>Campylorhynchus brunneicapillus</i>	Cactus Wren	PP
<i>Thryomanes bewickii</i>	Bewick's Wren	PIP

<i>Corvus cryptoleucus</i>	Chihuahuan Raven	PP
<i>Agelaius phoeniceus</i>	Red-winged Blackbird	PIP
<i>Aimophila botterii texana</i>	Texas Botteri's Sparrow	PIP
<i>Aimophila cassinii</i>	Cassin's Sparrow	PIP
<i>Ammodramus savannarum</i>	Grasshopper Sparrow	PIP
<i>Arremonops rufivirgatus</i>	Olive Sparrow	PP
<i>Cardinalis cardinalis</i>	Northern Cardinal	PIP
<i>Cardinalis sinuatus</i>	Pyrrhuloxia	PP
<i>Carpodacus mexicanus</i>	House Finch	PIP
<i>Chondestes grammacus</i>	Lark Sparrow	PIP
<i>Dendroica coronata</i>	Yellow-rumped Warbler	PIP
<i>Dendroica fusca</i>	Blackburnian Warbler	PP
<i>Geothlypis trichas inasperata</i>	Brownsville common yellowthroat	PIP
<i>Guiraca caerulea</i>	Blue Grosbeak	PIP
<i>Icteria virens</i>	Yellow-breasted Chat	PIP
<i>Icterus bullockii</i>	Bullock's Oriole	PP
<i>Melospiza melodia</i>	Song Sparrow	PIP
<i>Molothrus aeneus</i>	Bronzed Cowbird	PIP
<i>Molothrus ater</i>	Brown-headed Cowbird	PIP
<i>Passerculus sandwichensis</i>	Savannah Sparrow	PIP
<i>Passerina cyanea</i>	Indigo Bunting	PIP
<i>Passerina versicolor</i>	Varied Bunting	PIP
<i>Poocetes gramineus</i>	Vesper Sparrow	PIP
<i>Quiscalus mexicanus</i>	Great-tailed Grackle	PIP
<i>Sturnella magna</i>	Eastern Meadowlark	PIP
<i>Vermivora peregrina</i>	Tennessee Warbler	PIP
<i>Hirundo rustica</i>	Barn Swallow	PIP
<i>Petrochelidon pyrrhonota</i>	Cliff Swallow	PP
<i>Progne subis</i>	Purple Martin	PP
<i>Lanius ludovicianus</i>	Loggerhead Shrike	PIP
<i>Baeolophus bicolor</i>	Tufted Titmouse	PP
<i>Passer domesticus</i>	House Sparrow	PIP
<i>Mimus polyglottos</i>	Northern Mockingbird	PIP
<i>Toxostoma curvirostre</i>	Curve-billed Thrasher	PIP
<i>Toxostoma longirostre</i>	Long-billed Thrasher	PP
<i>Contopus virens</i>	Eastern Wood-Pewee	PIP
<i>Myiarchus tyrannulus</i>	Brown-crested Flycatcher	PIP
<i>Pitangus sulphuratus</i>	Great Kiskadee	PIP
<i>Sayornis phoebe</i>	Eastern Phoebe	PIP
<i>Tyrannus couchii</i>	Couch's Kingbird	PIP
<i>Tyrannus forficatus</i>	Scissor-tailed Flycatcher	PIP

<i>Tyrannus tyrannus</i>	Eastern Kingbird	PIP
<i>Vireo griseus</i>	White-eyed Vireo	PIP
<i>Colaptes auratus</i>	Northern Flicker	PIP
<i>Melanerpes aurifrons</i>	Golden-fronted Woodpecker	PIP
<i>Picoides scalaris</i>	Ladder-backed Woodpecker	PIP
<i>Caprimulgus vociferus</i>	Whip-poor-will	PIP
<i>Chordeiles acutipennis</i>	Lesser Nighthawk	PP
<i>Chordeiles minor</i>	Common Nighthawk	PIP
<i>Nyctidromus albicollis</i>	Common Pauraque	PP
<i>Otus asio</i>	Eastern Screech-Owl	PP
<i>Tyto alba</i>	Barn Owl, Common Barn-Owl	PP
Scientific Name	Common Name	Park Status1
Fish		
<i>Menidia beryllina</i>	inland silverside, tidewater silverside	PIP
<i>Astyanax mexicanus</i>	Mexican tetra	PIP
<i>Cyprinodon variegatus</i>	sheepshead minnow, sheepshead pupfish	PIP
<i>Fundulus grandis</i>	Gulf killifish	PIP
<i>Gambusia affinis</i>	mosquitofish, western mosquitofish	PIP
<i>Poecilia latipinna</i>	sailfin molly	PIP
<i>Mugil cephalus</i>	black mullet, gray mullet, striped mullet	PIP
<i>Lepomis macrochirus</i>	bluegill	PIP
<i>Cichlasoma cyanoguttatum</i>	Rio Grande cichlid, Rio Grande perch	PIP
<i>Dormitator maculatus</i>	fat sleeper	PIP
Scientific Name	Common Name	Park Status1
Mammals		
<i>Boselaphus tragocamelus</i>	nilgai	PIP
<i>Sus scrofa</i>	pig, pig (feral), wild boar	PIP
<i>Tayassu tajacu</i>	collared peccary	PP
<i>Canis latrans</i>	coyote	PIP
<i>Felis pardalis</i>	ocelot	E
<i>Lynx rufus</i>	bobcat	PIP
<i>Mephitis mephitis</i>	striped skunk	PIP
<i>Mustela frenata</i>	long-tailed weasel	PIP
<i>Procyon lotor</i>	common raccoon, northern raccoon, raccoon	PIP
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat	PIP

<i>Lepus californicus</i>	black-tailed jack rabbit, black-tailed jackrabbit	PIP
<i>Sylvilagus floridanus</i>	eastern cottontail	PIP
<i>Neotoma micropus</i>	southern plains woodrat	PIP
<i>Peromyscus leucopus</i>	white-footed mouse	PIP
<i>Rattus norvegicus</i>	Norway rat	PIP
<i>Rattus rattus</i>	black rat	PIP
<i>Sigmodon hispidus</i>	hispid cotton rat	PIP
<i>Spermophilus mexicanus</i>	Mexican ground squirrel	PP
<i>Dasybus novemcinctus</i>	long-nosed armadillo, nine- banded armadillo	PP
<b>Scientific Name</b>	<b>Common Name</b>	<b>Park Status1</b>
<b>Reptiles</b>		
<i>Coluber constrictor</i> <i>oaxaca</i>	Mexican Racer	PIP
<i>Coniophanes imperialis</i>	Regal Black-striped Snake	PP
<i>Drymarchon corais</i> <i>erebennus</i>	Texas Indigo Snake	PIP
<i>Masticophis flagellum</i> <i>testaceus</i>	Western Coachwhip	PIP
<i>Masticophis ruthveni</i>	Ruthven's Whipsnake	PIP
<i>Masticophis schotti</i> <i>ruthveni</i>	Ruthven's Whipsnake	PIP
<i>Nerodia rhombifer</i>	Diamondback Water Snake	PIP
<i>Pantherophis emoryi</i>	great plains rat snake	PIP
<i>Pituophis catenifer sayi</i>	Bullsnake	PIP
<i>Salvadora grahamiae</i> <i>lineata</i>	Texas Patch-nosed Snake	PIP
<i>Tantilla nigriceps</i>	Plains Black-headed Snake	PIP
<i>Thamnophis proximus</i> <i>orarius</i>	Gulf Coast Ribbon Snake	PIP
<i>Phrynosoma cornutum</i>	Texas Horned Lizard	PIP
<i>Sceloporus grammicus</i>	Mesquite Lizard	U
<i>Sceloporus olivaceus</i>	Texas Spiny Lizard	PIP
<i>Sceloporus variabilis</i> <i>marmoratus</i>	Rose-bellied Lizard	PIP
<i>Aspidoscelis gularis</i> <i>gularis</i>	Texas spotted whiptail	PIP
<i>Crotalus atrox</i>	Western Diamond-backed Rattlesnake, Western Diamondback Rattlesnake	PIP
<i>Trachemys scripta</i> <i>elegans</i>	Red-eared Slider	PIP
<i>Kinosternon flavescens</i>	Yellow Mud Turtle	PIP

<i>Gopherus berlandieri</i>	Berlandier's tortoise, Texas Tortoise	PIP
<i>Apalone spinifera emoryi</i>	Texas Spiny Softshell Turtle	PIP
<b>Scientific Name</b>	<b>Common Name</b>	<b>Park Status1</b>
<b>Vascular Plants</b>		
<i>Echinodorus berteroi</i>	upright burhead, upright burrhead	PIP
<i>Sagittaria longiloba</i>	long-barb arrowhead, longbarb arrowhead, longlobe arrowhead	PIP
<i>Cyclosporum</i> <i>leptophyllum</i>	marsh parsley	PIP
<i>Eryngium nasturtiifolium</i>	hierba del sapo, hierba-del- sapo	PIP
<i>Lemna minuta</i>	least duckweed	PIP
<i>Acourtia runcinata</i>	featherleaf desertpeony	PIP
<i>Ambrosia psilostachya</i>	Cuman ragweed, perennial ragweed, western ragweed	PIP
<i>Aphanostephus</i> <i>ramosissimus</i>	plains dozedaisy	PIP
<i>Baccharis neglecta</i>	Roosevelt-weed, Rooseveltweed	PIP
<i>Bidens laevis</i>	burmarigold, smooth beggartick, smooth beggarticks	PIP
<i>Borrchia frutescens</i>	bushy seaoxeye, bushy seaside tansy	PIP
<i>Calyptocarpus vialis</i>	straggler daisy	PIP
<i>Chromolaena odorata</i>	Jack in the bush, Siamweed	PIP
<i>Cirsium texanum</i>	Texas thistle	PIP
<i>Clappia suaedifolia</i>	fleshy clapdaisy	PIP
<i>Coreopsis tinctoria</i>	golden tickseed, plains coreopsis, plains tickseed	PIP
<i>Dyssodia pentachaeta</i>	Five-needle pricklyleaf	PIP
<i>Dyssodia tenuiloba</i> var. <i>treculii</i>	Bristleleaf dogweed	PIP
<i>Eclipta prostrata</i>	eclipta, false daisy, yerba de tago, yerba de tajo	PIP
<i>Erigeron tenellus</i>	Rio Grande fleabane	PIP
<i>Evax verna</i>	spring pygmy-cudweed, spring pygmycudweed	PIP
<i>Fleischmannia incarnata</i>	pink thoroughwort	PIP
<i>Florestina tripteris</i>	sticky florestina	PIP

<i>Gamochaeta falcata</i>	narrowleaf purple everlasting	PIP
<i>Gamochaeta pennsylvanica</i>	Pennsylvania everlasting	PIP
<i>Gutierrezia texana</i>	Texas broomweed, Texas snakeweed	PIP
<i>Helenium microcephalum</i>	littlehead tarweed, smallhead sneezeweed	PIP
<i>Helianthus annuus</i>	annual sunflower, common sunflower, sunflower, wild sunflower	PIP
<i>Isocoma drummondii</i>	drummond goldenweed, Drummond jimmyweed, Drummond's goldenbush, Drummond's jimmyweed	PIP
<i>Machaeranthera phyllocephala</i>	camphor daisy	PIP
<i>Packera tampicana</i>	Great Plains ragwort	PIP
<i>Parthenium hysterophorus</i>	ragweed parthenium, Santa Maria feverfew, whitetop weed	PIP
<i>Pluchea purpurascens</i>	sweetscent	PIP
<i>Ratibida columnifera</i>	Prairie coneflower, prairie coneflower (upright), prairieconeflower, redspike Mexican hat, upright prairie coneflower	PIP
<i>Senecio ampullaceus</i>	Texas ragwort	PIP
<i>Simsia calva</i>	awnless bushsunflower	PIP
<i>Sonchus asper</i>	perennial sowthistle, prickly sowthistle, spiny sowthistle, spiny-leaf sow-thistle	PIP
<i>Sonchus oleraceus</i>	annual sowthistle, common sow-thistle, common sowthistle, pualele, sow thistle, sow-thistle	PIP
<i>Symphyotrichum divaricatum</i>	southern annual saltmarsh aster	PIP
<i>Symphyotrichum subulatum</i>	eastern annual saltmarsh aster	PIP
<i>Trichocoronis wrightii</i>	limestone bugheal	PIP
<i>Trixis inula</i>	tropical threefold	PIP
<i>Verbesina encelioides</i>	golden crownbeard	PIP
<i>Verbesina microptera</i>	Texas crownbeard	PIP
<i>Wedelia texana</i>	hairy wedelia	PIP
<i>Batis maritima</i>	saltwort, turtleweed	PIP

<i>Hechtia glomerata</i>	guapilla	PIP
<i>Tillandsia baileyi</i>	reflexed airplant	PIP
<i>Tillandsia recurvata</i>	ballmoss, small ballmoss	PIP
<i>Tillandsia usneoides</i>	Spanish moss	PIP
<i>Lobelia berlandieri</i>	Berlandier's lobelia	PIP
<i>Lepidium austrinum</i>	southern pepperweed, southern pepperwort	PIP
<i>Lepidium lasiocarpum</i>	hairypod pepperweed, shaggyfruit pepperweed	PIP
<i>Lesquerella argyraea</i>	bladderpod, silver bladderpod	PIP
<i>Lesquerella lasiocarpa</i>	roughpod bladderpod	PIP
<i>Sisymbrium irio</i>	London rocket, Londonrocket, rocketmustard	PIP
<i>Koelerlinia spinosa</i>	allthorn, crown of thorns, spiny allthorn	PIP
<i>Phaulothamnus spinescens</i>	devilqueen, snake-eyes	PIP
<i>Sesuvium verrucosum</i>	sea purslane, verrucose sea-purslane, verrucose seapurslane, western seapurslane	PIP
<i>Trianthema portulacastrum</i>	desert horse-purslane, desert horsepurslane, horse purslane	PIP
<i>Alternanthera paronichyoides</i> var. <i>paronichyoides</i>	smooth joyweed	PIP
<i>Amaranthus blitoides</i>	mat amaranth, prostrate amaranth, prostrate pigweed	PIP
<i>Celosia nitida</i>	West Indian cock's comb	PIP
<i>Acanthocereus tetragonus</i>	triangle cactus	PIP
<i>Echinocactus texensis</i>	devil's pincushion, horsecrippler	PIP
<i>Echinocereus pentalophus</i>	ladyfinger cactus	PIP
<i>Ferocactus hamatacanthus</i> var. <i>sinuatus</i>	Turk's head	PIP
<i>Mammillaria heyderi</i>	Heyder pincushion cactus, little nipple cactus	PIP

<i>Opuntia engelmannii</i>	cactus apple, Engelmann pricklypear	PIP
<i>Opuntia engelmannii</i> var. <i>lindheimeri</i>	Texas prickly pear, Texas pricklypear	PIP
<i>Opuntia leptocaulis</i>	Christmas cactus, tasajillo, tesajo cactus (christmastree cacti)	PIP
<i>Thelocactus setispinus</i>	fishhook cactus, miniature barrel cactus	PIP
<i>Atriplex matamorenensis</i>	Matamoros saltbush	PIP
<i>Atriplex pentandra</i>	crested saltbush	PIP
<i>Chenopodium berlandieri</i>	netseed lambsquarters, pigseed goosefoot, pit-seed goosefoot, pitseed goosefoot	PIP
<i>Chenopodium murale</i>	nettle-leaf goosefoot, nettleleaf goosefoot	PIP
<i>Salicornia bigelovii</i>	dwarf saltwort	PIP
<i>Salicornia virginica</i>	Virginia glasswort	PIP
<i>Salsola kali</i>	prickly Russian thistle, Russian thistle, tumbleweed	PIP
<i>Salsola tragus</i>	prickly Russian thistle	PIP
<i>Suaeda linearis</i>	annual seepweed	PIP
<i>Suaeda tampsicensis</i>	coastal seepweed	PIP
<i>Acleisanthes obtusa</i>	Berlandier's trumpets	PIP
<i>Rivina humilis</i>	bloodberry rougeplant, rougeplant	PIP
<i>Portulaca oleracea</i>	akulikuli-kula, common purslane, duckweed, garden purslane, little hogweed, little-hogweed, purslane, pursley, pusley, wild portulaca	PIP
<i>Portulaca pilosa</i>	chisme, kiss me quick, kiss-me-quick	PIP
<i>Portulaca umbraticola</i>	wing-pod purslane, wingpod purslane	PIP
<i>Talinum aurantiacum</i>	orange fameflower, talinum	PIP
<i>Maytenus phyllanthoides</i>	Florida mayten, guttapercha mayten	PIP
<i>Schaefferia cuneifolia</i>	desert yaupon	PIP
<i>Callisia micrantha</i>	littleflower roseling	PIP
<i>Commelina erecta</i> var. <i>angustifolia</i>	whitemouth dayflower	PIP
<i>Bolboschoenus maritimus</i> ssp. <i>paludosus</i>	Saltmarsh bulrush	PIP

<i>Cyperus articulatus</i>	jointed flatsedge	PIP
<i>Cyperus esculentus</i>	chufa, chufa flatsedge, yellow nutgrass, yellow nutsedge	PIP
<i>Cyperus retroflexus</i>	one-flower flatsedge, oneflower flatsedge	PIP
<i>Eleocharis acicularis</i>	needle spikerush, needle spikesedge	PIP
<i>Eleocharis austrotexana</i>	Rio Grande spikerush	PIP
<i>Aristida purpurea</i> var. <i>longiseta</i>	Fendler threeawn, Fendler's threeawn, red threeawn, red threeawn (Fendler)	PIP
<i>Bothriochloa laguroides</i>	silver beardgrass	PIP
<i>Bouteloua trifida</i>	red grama	PIP
<i>Buchloe dactyloides</i>	buffalograss	PIP
<i>Chloris barbata</i>	swollen fingergrass	PIP
<i>Chloris canterai</i>	Paraguayan windmill grass	PIP
<i>Chloris ciliata</i>	fringed windmill grass	PIP
<i>Chloris X subdolichostachya</i>	Nash windmill grass, nash windmillgrass, short-spike windmill grass, shortspike windmill grass	PIP
<i>Cynodon dactylon</i>	Bermudagrass, chiendent pied-de-poule, common bermudagrass, devilgrass, grama-seda, manienie, motie molulu	PIP
<i>Dichanthium annulatum</i>	kleberg bluestem, Kleberg's bluestem	PIP
<i>Dichanthium aristatum</i>	Angleton bluestem	PIP
<i>Dichanthium sericeum</i>	silky bluestem	PIP
<i>Digitaria californica</i>	Arizona cottontop	PIP
<i>Digitaria cognata</i> var. <i>pubiflora</i>	Carolina crabgrass	PIP
<i>Enteropogon chlorideus</i>	buryseed umbrellagrass, windmill grass	PIP
<i>Eragrostis reptans</i>	creeping lovegrass	PIP
<i>Eriochloa pseudoacrotricha</i>	perennial cupgrass	PIP
<i>Eriochloa punctata</i>	Louisiana cupgrass	PIP
<i>Leptochloa dubia</i>	green spangletop, green sprangletop	PIP
<i>Leptochloa fusca</i>	Malabar sprangletop	PIP

<i>Leptochloa nealleyi</i>	Nealley's sprangletop	PIP
<i>Leptochloa panicea</i> ssp. <i>brachiata</i>	mucronate sprangletop	PIP
<i>Monanthochloe littoralis</i>	shoregrass	PIP
<i>Panicum hallii</i>	Hall panicum, Hall's panic, Hall's panicgrass, Hall's panicum, halls panicum	PIP
<i>Pappophorum vaginatum</i>	Pima pappusgrass, whiplash pappusgrass	PIP
<i>Paspalidium geminatum</i>	Egyptian panicgrass, Egyptian panicum	PIP
<i>Paspalum distichum</i>	knotgrass, knotroot paspalum	PIP
<i>Paspalum pubiflorum</i>	hairyseed paspalum	PIP
<i>Pennisetum ciliare</i>	buffelgrass	PIP
<i>Setaria leucopila</i>	bristlegrass, Plains bristlegrass, streambed bristlegrass, yellow bristlegrass, yellow foxtail	PIP
<i>Sorghum halepense</i>	aleppo milletgrass, herbe de Cuba, Johnson grass, Johnsongrass, sorgho d'Alep, sorgho de alepo, zacate Johnson	PIP
<i>Spartina patens</i>	marshhay cordgrass, salt meadow cordgrass, saltmeadow cordgrass	PIP
<i>Spartina spartinae</i>	gulf cordgrass	PIP
<i>Sporobolus pyramidatus</i>	whorled dropseed	PIP
<i>Sporobolus virginicus</i>	seashore dropseed	PIP
<i>Sporobolus wrightii</i>	big sacaton, giant sacaton	PIP
<i>Trichloris pluriflora</i>	Multiflower false Rhodes	PIP
<i>Tridens albescens</i>	white tridens	PIP
<i>Tridens eragrostoides</i>	lovegrass tridens	PIP
<i>Tridens texanus</i>	Texas fluffgrass, Texas tridens	PIP
<i>Urochloa fasciculata</i>	browntop signalgrass	PIP
<i>Urochloa maxima</i>	guineagrass	PIP
<i>Urochloa panicoides</i>	liverseed grass, liveseed grass, panic liverseed grass	PIP
<i>Urochloa texana</i>	Texas signalgrass	PIP
<i>Sideroxylon celastrinum</i>	bumelia, saffron plum	PIP
<i>Chamaesyce serpens</i>	matted sandmat, serpent spurge	PIP
<i>Croton capitatus</i>	doveweed, hogweed,	PIP

	hogwort, woolly croton, wooly croton	
<i>Croton leucophyllus</i>	twocolor croton	PIP
<i>Ditaxis humilis</i>	Low silverbush	PIP
<i>Jatropha cathartica</i>	Berlandier's nettlespurge	PIP
<i>Jatropha dioica</i>	leatherstem	PIP
<i>Jatropha dioica</i> var. <i>dioica</i>	leatherstem	PIP
<i>Phyllanthus polygonoides</i>	knotweed leaflower, smartweed leaf-flower, smartweed leaflower	PIP
<i>Acacia farnesiana</i>	aroma, Ellington curse, huisache, kandaroma, klu, Klu bush, popinac, sweet acacia, texas huisache	PIP
<i>Acacia greggii</i>	catclaw, catclaw acacia, devilsclaw, gregg catclaw, texas catclaw	PIP
<i>Chloroleucon ebano</i>	Texas ebony	PIP
<i>Dalea pogonathera</i> var. <i>walkerae</i>	Walker prairie clover, Walker prairieclover	PIP
<i>Dalea scandens</i> var. <i>paucifolia</i>	low prairie clover, low prairieclover	PIP
<i>Desmanthus virgatus</i>	wild tantan	PIP
<i>Desmanthus virgatus</i> var. <i>depressus</i>	wild tantan	PIP
<i>Eysenhardtia texana</i>	Texas kidneywood	PIP
<i>Leucaena pulverulenta</i>	great leadtree	PIP
<i>Melilotus albus</i>	White sweet clover	PIP
<i>Mimosa asperata</i>	black mimosa, Puerto Rico sensitive-briar	PIP
<i>Mimosa pigra</i> var. <i>berlandieri</i>	Black mimosa	PIP
<i>Mimosa strigillosa</i>	herbaceous mimosa, powderpuff	PIP
<i>Parkinsonia aculeata</i>	Jerusalem thorn, Jerusalem-thorn, Mexican palo verde, retama	PIP
<i>Prosopis glandulosa</i>	honey mesquite	PIP
<i>Prosopis glandulosa</i> var. <i>glandulosa</i>	honey mesquite	PIP
<i>Prosopis reptans</i> var. <i>cinerascens</i>	tornillo	PIP
<i>Sesbania drummondii</i>	poisonbean	PIP

<i>Sesbania herbacea</i>	bigpod sesbania, hemp sesbania, peatree	PIP
<i>Cynanchum barbigerum</i> <i>var. barbigerum</i>	Bearded swallow-wort	PIP
<i>Eustoma exaltatum</i>	catchfly prairie gentian, catchfly prairie-gentian, catchfly prairiegentian	PIP
<i>Oxalis dichondrifolia</i>	peonyleaf woodsorrel	PIP
<i>Oxalis stricta</i>	common yellow oxalis, erect woodsorrel, sheep sorrel, sourgrass, toad sorrel, upright yellow wood-sorrel, upright yellow woodsorrel, yellow woodsorrel	PIP
<i>Marsilea macropoda</i>	bigfoot waterclover	PIP
<i>Ehretia anacua</i>	anacua, knockaway	PIP
<i>Heliotropium angiospermum</i>	scorpion's-tail, scorpionstail	PIP
<i>Heliotropium curassavicum</i>	quail plant, salt heliotrope, seaside heliotrope	PIP
<i>Heliotropium curassavicum</i> <i>var. curassavicum</i>	salt heliotrope	PIP
<i>Micromeria brownei</i>	Browne's savory	PIP
<i>Salvia coccinea</i>	blood sage	PIP
<i>Teucrium cubense</i>	small coastal germander	PIP
<i>Aloysia gratissima</i>	whitebrush	PIP
<i>Glandularia bipinnatifida</i>	Dakota mock vervain	PIP
<i>Glandularia bipinnatifida</i> <i>var. bipinnatifida</i>	Dakota mock vervain, Dakota verbena	PIP
<i>Glandularia quadrangulata</i>	beaked mock vervain	PIP
<i>Lantana achyranthifolia</i>	brushland shrub-verbena, brushland shrubverbena	PIP
<i>Lantana urticoides</i>	West Indian shrubverbena, western lantana	PIP
<i>Phyla nodiflora</i>	frog fruit, sawtooth fogfruit, turkey tangle, turkey tangle fogfruit	PIP
<i>Phyla nodiflora</i> <i>var. incisa</i>	Common frog-fruit	PIP
<i>Verbena brasiliensis</i>	Brazilian vervain	PIP
<i>Verbena canescens</i>	gray vervain	PIP
<i>Verbena halei</i>	slender verbena, Texas verbena, Texas vervain	PIP
<i>Verbena runyonii</i>	Rio Grande vervain	PIP

<i>Agave americana</i>	American agave, American century plant, centuryplant	PIP
<i>Yucca treculeana</i>	Don Quixote's lace, trecul yucca	PIP
<i>Nothoscordum bivalve</i>	crowpoison	PIP
<i>Heteranthera dubia</i>	grass-leaf mud-plantain, grassleaf mudplantain	PIP
<i>Abutilon trisulcatum</i>	anglestem Indian mallow	PIP
<i>Anoda pentaschista</i>	field anoda	PIP
<i>Bastardia viscosa</i>	viscid mallow	PIP
<i>Billieturnera helleri</i>	coppery false fanpetals	PIP
<i>Hibiscus martianus</i>	heartleaf rosemallow, mountain rosemallow	PIP
<i>Malvastrum americanum</i>	Indian Valley false mallow	PIP
<i>Malvastrum coromandelianum</i>	threelobe false mallow	PIP
<i>Meximalva filipes</i>	texasfan	PIP
<i>Rhynchosida physocalyx</i>	buff petal, buffpetal	PIP
<i>Sida abutilifolia</i>	procumbent sida, prostrate sida, spreading fanpetals	PIP
<i>Sida spinosa</i>	prickly fanpetals, prickly sida	PIP
<i>Melochia pyramidata</i>	pyramidflower	PIP
<i>Lythrum alatum</i> <i>var. lanceolatum</i>	winged lythrum	PIP
<i>Lythrum californicum</i>	California loosestrife	PIP
<i>Oenothera speciosa</i>	pinkladies, Showy evening primrose, showy eveningprimrose	PIP
<i>Nymphaea elegans</i>	tropical royalblue waterlily	PIP
<i>Argemone sanguinea</i>	red pricklypoppy, spiny pricklypoppy	PIP
<i>Plantago rhodosperma</i>	redseed Indianwheat, redseed plantain	PIP
<i>Limonium carolinianum</i>	Carolina sea-lavender, Carolina sealavender	PIP
<i>Rumex chrysocarpus</i>	amamastla	PIP
<i>Anagallis arvensis</i>	pimpernel, scarlet pimpernel	PIP
<i>Samolus ebracteatus</i>	bractless brookweed, limewater brookweed, Mojave water pimpernel	PIP
<i>Clematis drummondii</i>	Drummond clematis, Drummond's clematis, old man's beard	PIP

<i>Condalia hookeri</i>	bluewood, Brazilian bluewood, lotebush	PIP
<i>Condalia hookeri</i> var. <i>hookeri</i>	Brazilian bluewood, Hooker's bluewood	PIP
<i>Karwinskia humboldtiana</i>	coyotillo	PIP
<i>Ziziphus obtusifolia</i>	graythorn, Lote bush, lotebush	PIP
<i>Cissus trifoliata</i>	sorrelvine	PIP
<i>Kalanchoe delagoensis</i>	chandelier plant	PIP
<i>Lenophyllum texanum</i>	coastal stonecrop	PIP
<i>Spermacoce glabra</i>	buttonplant, smooth false buttonweed	PIP
<i>Salix nigra</i>	black willow	PIP
<i>Phoradendron tomentosum</i>	bigleaf mistletoe, Christmas mistletoe, downy mistletoe	PIP
<i>Toxicodendron radicans</i>	eastern poison ivy, poison ivy, poisonivy	PIP
<i>Zanthoxylum fagara</i>	lime prickley ash, lime pricklyash	PIP
<i>Cardiospermum halicacabum</i>	balloonvine, love in a puff	PIP
<i>Castela erecta</i>	goatbush	PIP
<i>Castela erecta</i> ssp. <i>texana</i>	allthorn goatbush, Texan goatbush	PIP
<i>Dyschoriste crenulata</i>	wavyleaf snakeherb	PIP
<i>Elytraria bromoides</i>	wheatspike scalystem	PIP
<i>Ruellia nudiflora</i>	ruellia, violet wild petunia, wild petunia	PIP
<i>Stenandrium dulce</i>	sweet shaggytuft	PIP
<i>Forestiera angustifolia</i>	narrowleaf forestiera, texas forestiera, Texas swampprivet	PIP
<i>Bacopa monnieri</i>	coastal waterhyssop, herb of grace, herb-of-grace	PIP
<i>Leucophyllum frutescens</i>	cenizo, Texas barometer bush	PIP
<i>Mecardonia procumbens</i>	baby jump-up, baby jumpup	PIP
<i>Veronica peregrina</i> ssp. <i>xalapensis</i>	hairy purslane speedwell, neckweed	PIP
<i>Dichondra micrantha</i>	Asian ponysfoot	PIP

<i>Evolvulus alsinoides</i>	slender dwarf morning-glory, slender dwarf morningglory, slender dwarf-morning-glory	PIP
<i>Evolvulus alsinoides</i> var. <i>angustifolius</i>	dwarf morningglory, slender dwarf morning-glory	PIP
<i>Evolvulus sericeus</i>	silky evolvulus, silver dwarf morning-glory, silver dwarf morningglory, silver dwarf-morning-glory	PIP
<i>Ipomoea cordatotriloba</i>	cotton morningglory, tievine	PIP
<i>Nama hispidum</i>	bristly nama, purple mat	PIP
<i>Nama jamaicense</i>	Jamaicanweed	PIP
<i>Calibrachoa parviflora</i>	seaside petunia, seaside-petunia	PIP
<i>Capsicum annuum</i> var. <i>glabriusculum</i>	cayenne pepper, chilipiquin	PIP
<i>Chamaesaracha coronopus</i>	green false nightshade, green-leaf five-eyes, greenleaf five eyes	PIP
<i>Lycium berlandieri</i>	berlandier wolfberry, Berlandier's wolfberry	PIP
<i>Lycium carolinianum</i> var. <i>quadrifidum</i>	Carolina desert-thorn, largeflower wolfberry	PIP
<i>Margaranthus solanaceus</i>	netted globe-cherry, netted globecherry	PIP
<i>Physalis cinerascens</i>	smallflower groundcherry	PIP
<i>Physalis pubescens</i>	groundcherry, husk tomato, husk-tomato	PIP
<i>Solanum campechiense</i>	redberry nightshade	PIP
<i>Solanum elaeagnifolium</i>	silverleaf nightshade, tomato weed, trompillo, white horsenettle, white nightshade	PIP
<i>Solanum ptychanthum</i>	black nightshade, eastern black nightshade, nightshade, West Indian nightshade	PIP
<i>Solanum triquetrum</i>	Texas nightshade	PIP
<i>Hypericum pauciflorum</i>	fewflower St. Johnswort	PIP

<i>Typha domingensis</i>	Southern cat-tail, southern cattail	PIP
<i>Typha latifolia</i>	broadleaf cattail, cattail, cattail (common), common cattail	PIP
<i>Celtis laevigata</i>	sugar berry, sugar hackberry, sugarberry	PIP
<i>Celtis pallida</i>	desert hackberry, desert hackberry (spiny), granjeno, spiny hackberry	PIP
<i>Parietaria pensylvanica</i>	Pennsylvania pellitory	PIP
<i>Urtica chamaedryoides</i>	heartleaf nettle, slim stingingnettle	PIP
<i>Ibervillea lindheimeri</i>	balsamgourd, Lindheimer globeberry, Lindheimer's globeberry, Rio Grande globeberry	PIP
<i>Melothria pendula</i>	drooping melonnettle, Guadeloupe cucumber	PIP
<i>Passiflora foetida</i> var. <i>gossypiifolia</i>	cottonleaf passionflower	PIP
<i>Tamarix aphylla</i>	athel, Athel tamarisk, saltcedar, tamarisk, tamarix	PIP

<sup>1</sup>Park Status refers to the current status of the organism in the park, where PIP=Present in Park, PP=Probably Present, E=Encroaching, U=Unconfirmed, N/A=Not Available, H=Historic.

The U.S. Department of the Interior (DOI) is the nation's principal conservation agency, charged with the mission "*to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian tribes and our commitments to island communities.*" More specifically, Interior protects America's treasures for future generations, provides access to our nation's natural and cultural heritage, offers recreation opportunities, honors its trust responsibilities to American Indians and Alaska Natives and its responsibilities to island communities, conducts scientific research, provides wise stewardship of energy and mineral resources, fosters sound use of land and water resources, and conserves and protects fish and wildlife. The work that we do affects the lives of millions of people; from the family taking a vacation in one of our national parks to the children studying in one of our Indian schools.

NPS 469/106085, November 2010

**National Park Service**  
**U.S. Department of the Interior**



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