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THE VERNAL POOLS ON MESA DE BURRO OF THE SANTA ROSA PLATEAU, RIVERSIDE COUNTY, CALIFORNIA

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INTRODUCTION

One of the few remaining areas in southern California retaining vernal pools and marshes is the Santa Rosa Plateau of the Santa Ana Mountains in western Riverside County. The only other known locations for these rare seasonal pools in southern California are on Kearney (Miramar) and Otay Mesas in San Diego County (Purer, 1939; Witham, 1971, 1973; Nadolski, 1974).

The authors have reported on one large vernal marsh and three smaller vernal pools from Mesa de Colorado on the Santa Rosa Plateau in previous issues of this journal (Lathrop and Thorne, 1968; Thorne and Lathrop, 1969, 1970; Kopecko and Lathrop, 1975). However, during extensive field work by the authors in 1975, eight new vernal pools were discovered. Seven of the pools are located on the Mesa de Burro (Fig. 2), an isolated mesa on the eastern edge of the Santa Rosa Plateau (Lathrop and Thorne, 1968) 4.8 km northeast of Mesa de Colorado (Thorne and Lathrop, 1969) at approximately T7S, R3W, which could be Sec. 30 on surveyed land (Fig. 1). The eighth pool is located on the north-central edge of Mesa de la Punta (Fig. 3), a significantly smaller mesa lying approximately midway and slightly south between Mesas de Colorado and Burro. Since Mesa de la Punta, despite its much smaller area, has essentially the same elevation, soils, vegetation and geology as Mesa de Burro, only the latter, more significant mesa will be described in detail in this article. Access to both mesas is limited to trails negotiated only by four wheel drive vehicles and pickup trucks or on foot.

Because the vernal pools on Mesa de Burro have not previously been discussed botanically and because this mesa is the site selected for a proposed Riverside County airport (O'Brien and associates, 1973), the authors consider it essential to record the flora of the rare vernal pools and other communities on this mesa before they are possibly destroyed by projected development.

GEOLOGY AND SOILS

The relatively flat top of Mesa de Burro has an area of approximately 246 hectares and is elevated about 60 m above the Santa Rosa Plateau (18,100 hectares) for a total elevation above sea level of 730 m. Mesa de Burro is an erosional remnant of the plateau formed by undulating volcanic lava flows. The mesa is capped by hard, basic, Pleistocene olivine (Santa Rosa) basalt (Fig. 6). The plateau on which it rests is underlain by Mesozoic granitic rocks which have occasional overlays of upper Jurassic marine shales, both of which outcrop on hills, mesa slopes, and in some valleys (Snow, 1972).

The soils of Mesa de Burro are Murrieta stony clay loam under grassland on the mesa top and Las Posas rocky loam under oak woodland and chaparral on the mesa rim (Fig. 7) (USDA Western Riverside Soil Survey, 1971). Soils of the Murrieta series are derived from weathering of the olivine basalt and range in depth from 30 to 50 cm, except under occasional vernal pool sites, where it may be as shallow as 10 cm. These soils are moderately well drained and of moderate fertility but with slow permeability and runoff and a low water holding capacity of 5–7.6 cm. The surface soil, or the A horizon, is a dark red stony clay loam with a moderate, fine, angular blocky structure, averaging 7.6–20 cm thick, and is moderately acid (pH 5.6). The subsoil, or B horizon, is dark red or dark reddish gray heavy loam and clay, is moderately acid (pH 5.8), ranges in thickness from 22 to 50 cm, and is of a coarse prismatic structure, very sticky and very plastic. The parent rock, or R horizon, is of gray olivine basalt mottled with red and yellow, has many gas bubble cavities, and is many feet thick.

The Las Posas soils rimming the mesa are related to the Murrieta soils and occur on upland slopes ranging from 15 to 50 percent from the horizontal. They are well-drained soils which are developed on gabbro and range in depth from 38 to 50 cm to the weathered gabbro. This soil series has moderately slow permeability, low fertility, rapid runoff, and an available water holding capacity of 5–7.6 cm. Rock outcrops make up 2–10 percent of the surface. The surface soil is a reddish-brown to dark-brown loam, rocky loam, or clay loam of granular to angular blocky structure, slightly acid (pH 6.2), very sticky and plastic, and averages 9–21 cm in depth. The subsoil is yellowish red in color, neutral to slightly alkaline (pH 7–7.3) and consists of a B horizon of heavy clay loam to clay, averaging 21–43 cm in depth, and a C horizon of weathered gabbro 20–25 cm in depth. Below this is the gabbro parent rock.

PRECIPITATION AND DRAINAGE PATTERNS

Records from several weather stations near Mesa de Burro on the Santa Rosa Plateau give approximate precipitation readings for the mesa. Rancho California station 8 M, 3.6 km west of the mesa, received 36.1 cm of precipitation during the rainy season of 1973–74 (October–March) and 41.3 cm during the rainy season of 1974–75 (December–April). The Loma Linda

Fig. 1. Outline map of Mesa de Burro and nearby Mesa de la Punta (inset) showing relative locations and approximate sizes of the vernal pools. A small section of the eastern side of Mesa de Colorado (inset) is included for reference to the vernal pools on this mesa. See text for relative locations of the three mesas.

University station VMC on Mesa de Colorado, 4 km southwest of Mesa de Burro, showed 31.2 cm rainfall for the 1973-74 rainy season (November-March), and 49.7 cm for the 1974-75 rainy season (November-June), and 33 cm for the rainy season of 1975-76 (September-April). The Rancho California station at the Santa Rosa ranch, 3.2 km southwest of Mesa de Burro had a mean annual precipitation of 52.8 cm for the period 1949 through 1971 (Snow, 1972). It was also noted at this station that about 95 percent of the seasonal rainfall fell from November through April and that the lowest and highest recorded seasonal precipitations were 21 cm in 1951 and 137.92 cm in 1969. The mean annual precipitation recorded at the USFS Tenaja Guard Station, 11.6 km southwest of Mesa de Burro, for the period 1960 to 1966 was 42.2 cm (Lathrop and Thorne, 1968). O'Brien and associates (1973) estimate the mean yearly precipitation totals for Mesa de Colorado to be 33 cm.

Drainage areas on the mesa are dry most of the year but seasonal rains are temporarily held in depressions in the grassland to form run-off streams,

Fig. 2. Aerial photograph of Mesa de Burro from the southwest. The vernal pools are located in the grassland of the mesa top. Chaparral covers the mesa slopes and oak woodland and chaparral fringe the mesa edge. The photograph was taken in December, 1975, while the pools were still dry.

Fig. 3. Aerial photograph of the northwestern end of Mesa de Burro showing Mesa de la Punta to the southwest in the center background. Two of the dry vernal pools appear in the center foreground. Photograph taken in December, 1975.

tenajas, vernal pools and occasional drainage areas of wet grassy "meadows" (Fig. 1). Runoff from the watersheds to the east and west flow into Murrieta Creek which drains to the southeast into the Santa Margarita River (O'Brien and associates, 1973).

PLANT COMMUNITIES

Only dominant and subdominant or otherwise representative plant species are listed here for each community on Mesa de Burro; and no attempt has been made to report a complete flora or community description. Classification of the communities is according to Thorne (1976) from which further information on these communities can be obtained. Also, the species, with the exception of those reported new for the Santa Rosa Plateau, are listed, along with their habitat or habitats in the vernal marsh articles referred to above for Mesa de Colorado or in the flora of the Plateau (Lathrop and Thorne, 1968). Nomenclature of plant species listed largely follows that of Munz (1974).

VERNAL POOLS

The relative locations of the vernal pools and related shallower wet depressions of drainage areas are shown in Figure 1. The area of each of the vernal pools was determined using a compensating polar planimeter over USDA aerial survey maps cited in the references. Since the area measured included the zone of influence on the surrounding grassland, the actual area of standing water will be less, depending on the steepness of the slope on the pool banks. The one vernal marsh (Fig. 4) is 1.63 hectares in area, the seven vernal pools range in area from less than 0.41 to 1.63 hectares and three shallow wet depressions or "meadows" on the mesa are all approximately 0.25 hectares each in area (Fig. 1).

The plant species found in the variety of vernal pools and the vernal marsh on Mesa de Burro are typical of those reported for vernal pools elsewhere in California. Besides the references cited previously for Mesa de Colorado and the Kearney Mesa there are several articles relating to vernal pools and their floras in northern California. Among these are: Fassett (1951); Kaplan (1967); Lin (1970); Linhart and Baker (1973); Linhart and Pickett (1973); Linhart (1974); Luckenbach (1973); Moran (1969); Rickabaugh (1974); Rubtsoff (1960, 1961, 1969); Weiler (1962); and Wood (1961).

The distinguishing feature of the vernal marsh on Mesa de Burro as opposed to the vernal pools is the dominance, in the former, of emergent spike rushes, *Eleocharis macrostachya* Britt. in Small and *E. parishii* Britt. Other than this feature, the marsh and the pools are essentially alike floristically. However, there is diversity as well as similarity in species among the various pools on the mesa. Also the plant species are not uniformly dispersed throughout the area of the pools but tend to be randomly dispersed within broad moisture zones (Thorne and Lathrop, 1969; Kopecko and Lathrop, 1975).

Fig. 4. Aerial photograph showing a portion of the central northeastern edge of Mesa de Burro. Miller canyon with its dense cover of oak woodland and chaparral appears in the center and the dry bed of a vernal marsh is shown in the right center of the picture. The photograph was taken in December, 1975.

Fig. 5. View of the extreme southeastern edge of Mesa de Burro showing the dry bed of a small vernal pool in the center foreground. Grassland badly trodden by grazing cattle is shown in the foreground and chaparral and oak woodland can be seen along the mesa's edge in the background. Photograph was taken in early January, 1976.

Blennosperma nanum (Hook.) Blake and *Ranunculus californicus* Benth. in the vernal moist grassland near the margin of the pools are representative species of the relatively rich and showy flora of this zone. The moist muddy margin of the pools is dominated by semiaquatics such as *Crassula aquatica* (L.) Schoenl., *Callitriche marginata* Torr., *Eleocharis acicularis* (L.) R. & S. and *Trifolium variegatum* Nutt. in T. & G. *Pilularia americana* A. Br. is also locally abundant in this zone (Thorne and Lathrop, 1970).

The shallow standing water of the pool borders perhaps contains the greatest diversity of aquatics. Among these are *Callitriche longipedunculata* Morong, *Downingia cuspidata* (Greene) Greene, *Elatine californica* Gray, *E. chilensis* C. Gay, *Lilaea scilloides* (Poir.) Haum., *Plagiobothrys undulatus* (Piper) Jtn., and *Ranunculus aquatilis* L. var. *capillaceus* (Thuill.) DC. *Isoetes howellii* Engelm. and *I. orcuttii* A.A. Eat. were also found in several of the mesa pools.

The dry bed zone of the pools has a unique flora often containing species typically flowering only following complete desiccation of the pool. These species include *Navarretia prostrata* (Gray) Greene, *Eryngium aristulatum* Jeps. var. *parishii* (Coul. & Rose) Math. & Const., *Orcuttia californica* Vasey, *Myosurus minimus* L. var. *apus* Greene, *Amaranthus californicus* L., *Lythrum hyssopifolium* L., and *Gnaphalium palustre* Nutt.

Additional species collected or observed in the vernal pools of Mesa de Burro by the authors during field work in 1975 are as follows:

<i>Alopecurus howellii</i>	<i>Mimulus guttatus</i>
<i>Anagallis arvensis</i>	<i>Mimulus pilosus</i>
<i>Cotula coronopifolia</i>	<i>Montia fontana</i> ssp. <i>amporitana</i>
<i>Crassula erecta</i>	<i>Navarretia atractyloides</i>
<i>Deschampsia danthonioides</i> var. <i>gracilis</i>	<i>Navarretia hamata</i> ssp. <i>hamata</i>
<i>Filago gallica</i>	<i>Phalaris caroliniana</i>
<i>Juncus bufonius</i>	<i>Polypogon monspeliensis</i>
<i>Juncus kelloggii</i>	<i>Psilocarpus brevissimus</i>
<i>Juncus sphaerocarpus</i>	<i>Psilocarpus tenellus</i>
<i>Lepidium nitidum</i>	<i>Rumex salicifolius</i>
<i>Marsilea vestita</i>	<i>Veronica peregrina</i> ssp. <i>xalapensis</i>

SOUTHERN CALIFORNIA GRASSLAND

Grassland occupies nearly the entire mesa top (Figs. 2, 5, and 7) and the vernal pools are all within this community. Grasses dominate and include the following species, indicated in order of their importance in the community as determined by Kopecko and Lathrop (1975) in the grassland of nearby Mesa de Colorado: *Bromus mollis* L., *Avena barbata* Brot., *Vulpia myuros* (L.) Rydb., and *Bromus diandrus* Roth. Perennial and ephemeral forbs are also abundant and occur randomly or locally abundant with the grasses. Some of the more common species are *Erodium cicutarium* (L.) L'Her., *Hypochoeris glabra* L., *Microseris linearifolia* (DC.) Sch.-Bip., *Plagiobothrys nothofulvus* (Gray) Gray and *Plantago erecta* Morris ssp. *erecta*. The authors also collected or observed the following additional species in this community on Mesa de Burro:

Fig. 6. View of the southwestern end of Mesa de Burro showing prominent outcrops of basaltic boulders capping the mesa. Photograph taken in early January, 1976.

Fig. 7. View of Mesa de la Punta looking northeast toward Mesa de Burro. Outcropping boulders of basaltic lava are typical in the grassland of the mesa top. Oak woodland of *Quercus agrifolia* and *Q. engelmannii* fringe the mesa edge in the background. Photograph taken in early January, 1976.

<i>Allium haematochiton</i>	<i>Lasthenia chrysostoma</i> ssp. <i>chrysostoma</i>
<i>Amsinckia intermedia</i>	<i>Layia platyglossa</i> ssp. <i>campestris</i>
<i>Astragalus pomonensis</i>	<i>Linanthus dianthiflorus</i>
<i>Avena fatua</i>	<i>Lomatium utriculatum</i>
<i>Brodiaea terrestris</i> ssp. <i>kernensis</i>	<i>Lupinus concinnus</i> ssp. <i>concinnus</i>
<i>Bromus rubens</i>	<i>Lupinus excubitus</i> var. <i>hallii</i>
<i>Bromus tectorum</i>	<i>Microseris douglasii</i> ssp. <i>platycarpa</i>
<i>Calandrina ciliata</i> var. <i>menziesii</i>	<i>Microsteris gracilis</i> ssp. <i>gracilis</i>
<i>Calochortus splendens</i>	<i>Muilla maritima</i>
<i>Cerastium glomeratum</i>	<i>Opuntia phaeacantha</i> var. <i>discata</i>
<i>Chaenactis glabriscula</i>	<i>Orthocarpus purpurascens</i> var.
<i>Clarkia purpurea</i> ssp. <i>quadrivulnera</i>	<i>purpurascens</i>
<i>Eriogonum gracile</i>	<i>Platystemon californicus</i>
<i>Eschscholzia californica</i>	<i>Poa annua</i>
(incl. var. <i>peninsularis</i>)	<i>Poa scabrella</i>
<i>Euphorbia albomarginata</i>	<i>Sanicula arguta</i>
<i>Euphorbia crenulata</i>	<i>Selaginella bigelovii</i>
<i>Gastidium ventricosum</i>	<i>Sidalcea malvaeflora</i> ssp. <i>sparsifolia</i>
<i>Gilia angelensis</i>	<i>Silene gallica</i>
<i>Hemizonia fasciculata</i>	<i>Sisyrinchium bellum</i>
<i>Holocarpha virgata</i> ssp. <i>elongata</i>	<i>Stipa pulchra</i>
<i>Hordeum californicum</i>	<i>Trichostema lanceolatum</i>
<i>Lamareckia aurea</i>	<i>Trifolium variegatum</i>

SOUTHERN CALIFORNIA OAK WOODLAND

Oaks, along with chaparral, dominate in an irregular distribution along the edges of Mesa de Burro (Figs. 2, 5, and 7) in canyons running off the mesa (Fig. 4). The oaks are primarily two species, *Quercus engelmannii* Greene and *Q. agrifolia* Nee. The boundary between woodland and chaparral is not always distinct, but a common chaparral oak (*Quercus dumosa* Nutt.) intermingles with the above species on the mesa ridge and hybridizes with *Q. engelmannii* in a few areas on the Santa Rosa Plateau (Lathrop and Thorne, 1968).

A common undershrub in this woodland is *Prunus ilicifolia* (Nutt.) Walp. ssp. *ilicifolia*. Grasses typical of the grassland dominate as a ground cover along with a species common on banks of shallow ravines in the woodland, *Muhlenbergia rigens* (Benth.) Hitchc. Many ephemeral and perennial forbs also occur as part of the ground cover along with the grasses. Some of the more common species are *Perezia microcephala* (DC.) A. Gray, *Toxicodendron radicans* L. ssp. *diversilobum* (T. & G.) Thorne, *Cordylanthus filifolius* Nutt. ex Benth. in DC., and *Marah macrocarpus* (Greene) Greene. Other species found making up the remainder of the ground cover in the oak woodland community of the mesa are:

<i>Apiastrum angustifolium</i>	<i>Linanthus liniflorus</i> ssp. <i>pharnaceoides</i>
<i>Boisduvalia densiflora</i>	<i>Phacelia cicutaria</i> var. <i>hispida</i>
<i>Camissonia californica</i>	<i>Phacelia ramosissima</i> Dougl. var.
<i>Chorizanthe polygonoides</i> ssp. <i>longispina</i>	<i>suffrutescens</i>
<i>Delphinium parryi</i>	<i>Polypodium californicum</i>
<i>Eucrypta chrysanthemenifolia</i>	<i>Pterostegia drymarioides</i>
<i>Galium aparine</i>	<i>Thysanocarpus curvipes</i> var. <i>elegans</i>

CHAPARRAL

This community covers the majority of the slopes of Mesa de Burro and forms a narrow border around the mesa top (Figs. 2-4). *Quercus dumosa* Nutt., a shrublike oak, was the only tree occurring in the chaparral of the mesa. The dominant shrub of this scrub community is *Adenostoma fasciculatum* H. & A. *Malosma laurina* (Nutt. in T. & G.) Nutt. ex Abrams was perhaps equally dominant with this shrub. *Ceanothus crassifolius* Torr., *Cercocarpus minutiflorus* Abrams, *Eriodictyon crassifolium* Benth., *Eriogonum fasciculatum* Benth. ssp. *foliolosum* (Nutt.) S. Stokes and *Xylococcus bicolor* Nutt. are the most common large shrubs associated with these two dominant species. *Ribes indecorum* Eastw. and *Zauschneria californica* Presl. ssp. *mexicana* (Presl.) Raven are commonly seen among the large basaltic boulders outcropping on the mesa shelf (Fig. 6). Grass species typical of the rocky chaparral slopes are *Stipa coronata* Thurb. in S. Wats., *Melica imperfecta* Trin. and *Bromus pseudolaevipes* Wagnon. Among other species observed filling in as ground cover and spaces between the larger shrubs in the chaparral on the mesa were:

Antirrhinum nuttallianum	Haplopappus squarrosus
Artemisia californica	Heteromeles arbutifolia
Aspidotis californica	Lathyrus laetiflorus ssp. alefeldii
Calystegia macrostegia ssp. arida	Lonicera subspicata var. johnstonii
Centaurea melitensis	Lotus scoparius
Cheilanthes newberryi	Mimulus puniceus
Chorizanthe fimbriata	Paeonia californica
Clematis pauciflora	Pellaea andromedaefolia
Corethrogyne filaginifolia var. virgata	Pellaea mucronata
Cryptantha muricata	Pityrogramma triangularis
Dudleya lanceolata	Plantago erecta ssp. erecta
Dudleya pulverulenta	Rhamnus ilicifolia
Eriogonum elongatum	Salvia apiana
Eriophyllum confertiflorum	Salvia mellifera
Euphorbia albomarginata	Sambucus mexicana
Galium angustifolium ssp. angustifolium	Scrophularia californica var. floribunda
Galium nuttallii ssp. nuttallii	Solidago californica
Gnaphalium bicolor	Stephanomeria virgata
Gnaphalium californicum	

RUDERAL

Most plant communities have weedy components and those on Mesa de Burro are no exception. Some of the more common weedy ephemerals and perennials seen along cattle trails, jeep roads, exploratory bulldozed roads, and in a few small areas of heavy cattle grazing on Mesa de Burro are listed:

Brassica geniculata	Heterotheca grandiflora
Cynodon dactylon	Matricaria matricarioides
Eremocarpus setiger	Melilotus indicus
Heliotropium curassavicum var. oculatum	Spergularia bocconii
	Xanthium strumarium

ADDITIONS AND CORRECTIONS TO THE FLORA OF THE SANTA ROSA PLATEAU

The discovery of several new vernal pools and areas of wet meadows on Mesa de Burro and the resultant additional field work on the mesa has added

a number of species to the plateau flora (Lathrop and Thorne, 1968). Previous updatings of this florula appeared in two earlier articles in this journal (Thorne and Lathrop, 1969 and 1970). Species new to the plateau found on the Mesa de Burro are preceded by a double asterisk in the following list. Species not collected nor listed during the earlier floristic survey but which have been discovered since on the plateau or for which overlooked herbarium specimens have been studied are included here and are preceded in the accompanying list by a single asterisk. A few species which have undergone recent nomenclatural changes are also included and explained in the list. All species are listed in the order in which they did or should occur in the florula. The first set of specimens are on file in the herbarium of the Rancho Santa Ana Botanic Garden and a second set at Loma Linda University.

- JUNIPERUS CALIFORNICUS Carr. A badly stunted specimen, less than 1/3 m tall and wide, in a crevice of a large granitic boulder along Tenaja Creek at Tenaja Guard Station, Cleveland National Forest, Thorne et al. 47295, was definitely determined as this conifer.
- **PSILOCARPHUS TENELLUS Nutt. One plant was found in a vernal wet, clayey opening in grassland of Mesa de Burro, Thorne and Lathrop 45504.
- *LOTUS SCOPARIUS (Nutt. in T. & G.) Ottley var. BREVIOLATUS (Ottley) Munz. This slender-stemmed form of the species was collected by C. B. Wolf 7962 in chaparral on the Santa Rosa Plateau. His specimen in the herbarium of Rancho Santa Ana Botanic Garden was inadvertently overlooked during the earlier compilation of the plateau flora.
- **GERANIUM DISSECTUM L. This introduced weed was collected by Thorne 45515 and Lathrop 7457 along a drainage way in grassland on Mesa de Burro.
- *SALVIA CLEVELANDII (Gray) Greene. C. B. Wolf collected this shrub on the Plateau along the road between Santa Margarita Peak and the USFS Tenaja Guard Station. His specimen, number 7965 in the RSA herbarium, was overlooked in the original plateau flora. It is rare in the area and has not been reported from north of here within the Santa Ana Mountains.
- SIDA LEPROSA (Ort.) K. Schum. var. HEDERACEA (Dougl.) K. Schum. is the name currently accepted for *Sida hederacea* (Dougl.) Torr., listed for grassland in the plateau flora.
- **NAVARRERIA INTERTEXTA (Benth.) Hook. This small annual was found by G. E. Johnston and Lathrop 4, and Thorne, et al. 47317 high on the dry bank of a vernal pool near the head of Miller Canyon on Mesa de Burro (Figs. 1, 3).
- **CHORIZANTHE POLYGONOIDES T. & G. ssp. LONGISPINA (Goodm.) Munz. Several overly mature and brittle specimens of this erect annual were found along a streamway among lava boulders on Mesa de Burro, Thorne, et al. 47305.
- **MONTIA FONTANA L. ssp. AMPORITANA Semen. This species, collected by Lathrop 7456, and Thorne and Lathrop 45502, 45520, was locally abundant in seasonal-wet grassy depressions of drainage areas (Fig. 1) in the grassland and on the wet margin of the vernal marsh of Mesa de Burro.
- *JEPSONIA PARRYI (Torr.) Small. This seasonal plant was collected on the Santa Rosa Plateau in several locations by Colin Wainwright and Larry DeBuhr, Feb. 10, 1972, in riparian habitats within southern California oak woodland.
- *CAREX SENTA Boott. Lathrop collected this sedge, number 6366, along a seasonally wet stream bank in southern California oak woodland near the Tenaja Guard Station on the plateau.
- **JUNCUS KELLOGGII Engelm. This tiny annual was rather abundant in vernal wet shallow, clayey depressions in grassland, Lathrop 7462 and Thorne and Lathrop 45498, growing with *J. bufonius* L. and *J. sphaerocarpus* Nees.
- HORDEUM GENICULATUM Allioni. This is apparently the correct name for *H. hystrix* Roth, as originally listed in our flora (Lathrop and Thorne, 1968).

VULPIA MYUROS (L.) Rydb. This is the currently accepted name for *Festuca myuros* L., reported as locally abundant in the vernal moist zone of vernal pools on the plateau.

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SUMMARY

Seven newly discovered vernal pools and marshes on the lava-capped Mesa de Burro (and one on the adjacent Mesa de la Punta) are discussed. The location, geology, soils, precipitation, drainage patterns, and plant communities of the Mesa de Burro are described. For each of the plant communities the species collected or observed are listed. Eight species, including six found on the Mesa de Burro only, are added to the known flora of the Santa Rosa Plateau. With these additions, the flora of the Plateau, some 18,100 hectares in area, consists of at least 18 pteridophyte species (in 15 genera of 10 families), one conifer, 366 dicots (in 217 genera of 62 families), and 106 monocots (in 49 genera of 11 families) for a total of 491 species in 282 genera of 84 families. Seventy-five of the species are believed to be introduced and 416 indigenous to the Plateau.

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