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Sonoran Granite Outcrop Desert Scrub

BpS Model/Description Version: Aug. 2020

Modelers		Reviewers	
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None	None	None	None

Vegetation Type

Shrubland

Map Zone

14

Geographic Range

This ecological system occurs in foothills and mountains of Sonora, Mexico, and extends north across the border into southern Arizona.

Biophysical Site Description

This ecological system is found on low- to mid-elevation granitic outcrops.

Vegetation Description

Tropical genera of *Jatropha* and *Bursera* become co-dominants in dense to sparse vegetation transitioning upslope from Sonoran Paloverde-Mixed Cacti Desert Scrub (CES302.761). Diagnostic species are *Bursera microphylla*, *Jatropha cuneata*, *Nolina bigelovii*, *Parkinsonia microphylla*, or *Rhus kearneyi*. *Jatropha cuneata* is locally abundant on gravelly plains and rocky slopes. *Bursera microphylla* is rare to locally common in washes, on gravelly plains, and on rocky limestone or igneous slopes. At the northern part of its range, it grows in warm microhabitats.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
BUMI	<i>Bursera microphylla</i>	Elephant tree
JACU	<i>Jatropha cuneata</i>	Physicnut
NOBI	<i>Nolina bigelovii</i>	Bigelow's nolina
PAMI5	<i>Parkinsonia microphylla</i>	Yellow paloverde
RHKE	<i>Rhus kearneyi</i>	Kearney's sumac
AMDE4	<i>Ambrosia deltoidea</i>	Triangle burr ragweed

Species names are from the NRCS PLANTS database. Check species codes at <http://plants.usda.gov>.

Disturbance Description

Fires are historically rare, dependent upon grasses and other fine fuels that are more productive in wet years. Freezing temperatures are another disturbance that limits distribution. Fuel model in Class A is uncertain, will depend on grass response to moisture events. Fuel is often discontinuous.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	509	100		
Moderate (Mixed)				
Low (Surface)				
All Fires	509	100		

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is the central tendency modeled. Percent of all fires is the percent of all fires modeled in that severity class. Minimum and Maximum FIs show the relative range of fire intervals as estimated by model contributors, if known.

Scale Description

Very patchy, forms large patches with sparse to clumped vegetation canopy.

Adjacency or Identification Concerns

Issues or Problems

Current fire frequency is increasing. Impacts of invasive annual grass red brome, has been the cause of many serious fires in the northern Sonoran Desert (Esque et al. 2004). Depending on fine fuel amounts and continuity, fire behavior fuel model may be 1.

Native Uncharacteristic Conditions

Comments

Succession Classes

Mapping Rules

Upper Layer Lifeform	Height (m)	Canopy Cover (%)									
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
Herb	0-0.5	A	A	A	A	A	A	A	A	A	A
Herb	0.5-1.0	A	A	A	A	A	A	A	A	A	A
Herb	>1.0	A	A	A	A	A	A	A	A	A	A
Shrub	0-0.5	A	A	A	A	A	A	A	A	A	A
Shrub	0.5-1.0	A	A	B	B	B	UN	UN	UN	UN	UN
Shrub	1.0-3.0	A	A	B	B	B	UN	UN	UN	UN	UN
Shrub	>3.0	A	A	B	B	B	UN	UN	UN	UN	UN
Tree	0-5	B	B	B	B	B	UN	UN	UN	UN	UN
Tree	5-10	B	B	B	B	B	UN	UN	UN	UN	UN
Tree	10-25	B	B	B	B	B	UN	UN	UN	UN	UN
Tree	25-50	B	B	B	B	B	UN	UN	UN	UN	UN
Tree	>50	B	B	B	B	B	UN	UN	UN	UN	UN

Succession class letters A-E are described in the Succession Class Description section. Some classes use a leafform distinction where a qualifier is added to the class letter: Brdl (broadleaf), Con (conifer), or Mix (mixed conifer and broadleaf). UN refers to uncharacteristic native or a combination of height and cover that would not be expected under the reference condition. NP refers to not possible or a combination of height and cover which is not physiologically possible for the species in the BpS.

Description

Class A	16	Early Development 1 - Open
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
BUMI	Bursera microphylla	Elephant tree	Upper
JACU	Jatropha cuneata	Physicnut	Upper
NOBI	Nolina bigelovii	Bigelow's nolina	Middle
PAMI5	Parkinsonia microphylla	Yellow paloverde	Upper

Description

Shrub seedling establishment following disturbance. *Bursera microphylla* seeds germinate readily but suffer high mortality at 10-40cm heights.

Maximum Tree Size Class

None

Class B	84	Late Development 1 - All Structures
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
BUMI	Bursera microphylla	Elephant tree	Upper
JACU	Jatropha cuneata	Physicnut	Upper
NOBI	Nolina bigelovii	Bigelow's nolina	Middle
PAMI5	Parkinsonia microphylla	Yellow paloverde	Upper

Description

Young to mature community, with a mixture of sizes and classes. *Bursera microphylla* may get to 8m height. *Jatropha cuneata* reaches 2m and may start to die at ages >55yrs. Isolated clumps of vegetation may be >50% canopy cover.

Maximum Tree Size Class

None

Model Parameters

Deterministic Transitions

From Class	Begins at (yr)	Succeeds to	After (years)
Early1:OPN	0	Late1:ALL	20
Late1:ALL	21	Late1:ALL	999

Probabilistic Transitions

Disturbance Type	Disturbance occurs In	Moves vegetation to	Disturbance Probability	Return Interval (yrs)	Reset Age to New Class Start Age After Disturbance?	Years Since Last Disturbance

Replacement Fire	Early1:OPN	Early1:OPN	0.002	500	Yes	0
Wind or Weather or Stress	Early1:OPN	Early1:OPN	0.006	167	Yes	0
Replacement Fire	Late1:ALL	Early1:OPN	0.002	500	Yes	0
Wind or Weather or Stress	Late1:ALL	Early1:OPN	0.0066	152	Yes	0

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