Ironwood Forest National Monument

Natural History Synopsis

Overview The Ironwood Forest National Monument (IFNM) comprises 129,000 acres of prime Sonoran Desert northwest of the Tucson basin. There are eight mountain ranges and two large valleys with elevations ranging from 1550 to 4195 ft. The mountains have complex and variable geological histories, some being entirely volcanic in origin and others having significant intrusions of limestone and other rocks. This variability impacts the kinds of plants and animals that live here. About 45% of IFNM is classified as the Arizona Upland subdivision of the Sonoran Desert and the remainder is considered the Lower Colorado River Valley subdivision. Nearly 600 plant species and 121 vertebrate animal species are found within IFNM. The area is maintained by the Bureau of Land Management (BLM). No permits are required to visit the area, but you should consult the BLM leaflet that describes access and gives a map of the monument. There are no facilities so precautions should be taken to avoid excessive heat and lack of water. Temperatures range from below freezing in the winter and up to 110 °F in summer. Rain averages about 10 inches per year with a winter rainy season and a monsoon period of July-September. The Sonoran Desert supports a beautifully diverse flora and fauna that rivals most of the world’s deserts.

Plants Of the 594 taxa of plants on IFNM, 91 are “sunflowers” (family Asteraceae), 82 are grasses (Poaceae), 43 are cacti (Cactaceae), 36 are bean/pea relatives (Fabaceae), and 61 (about 10%) are exotic (i.e. introduced non-native species) but only six of these seem widespread and aggressive with Buffelgrass being the most problematic.

The most ecologically important or keystone species include the ubiquitous Ironwood Tree, Paloverde (2 species), Saguaro Cactus, and Velvet Mesquite. Cacti include cholla (9 taxa plus 10 hybrids), prickly pear (7 plus 3 hybrids), hedgehog (3), pincushion (3), and barrel cactus (3). Ironwood is an abundant tree (to 30’ high) on the slopes and ravines of the mountains and is known to serve over 640 associated species of plants and animals for shade, food, perches and shelter. Like many other legumes its roots host nitrogen fixing bacteria that enrich the soils. Foothill or Yellow Paloverde and Saguaro or Giant Cacti are also important dominants of the slopes. Mesquite trees serve similarly important roles in the flatland deserts of the valleys often dominated by grasses and Creosote. Abundant bushes include Ocotillo, White Thorn and Catclaw Acacia, Triangle Bursage, Jojoba, White Ratany, Canyon Ragweed, Wolfberry, and Gray-thorn. Along the lower washes Blue Paloverde is common. Numerous and colorful annual flowers appear in early spring after good winter rains and in early fall. A number of unique species are mentioned in the areas described on back.

Animals Insects are the most abundant types of animals, and ants are especially common, for example there are several kinds of harvester ants (feed primarily on seeds), leaf cutter ants (grow fungus gardens underground), and army ants (raids opportunist food sources). Grasshoppers, beetles, cicadas, butterflies, and true bugs are common with each species being abundant according to its particular life cycle. Spiders and centipedes are common.

More conspicuous animals such as vertebrates include 15 mammals, 55 birds, 43 reptiles, and 8 amphibians. Diurnal mammals (Black-tailed Jack Rabbit, Desert Cottontail, Harris’ Antelope Squirrel) are the most conspicuous but nocturnal or crepuscular species (Collared Peccary or Javelina, Kit & Gray Foxes, Bobcat, Mule Deer and Badger) are common. However, the most spectacular is the Bighorn Sheep. Once widespread in southern Arizona, these sheep reach their eastern-most AZ natural distribution in IFNM. Commonly observed birds include Gila Woodpecker, Roadrunner, Cactus Wren, Mourning Dove, Pyrrhuloxia, Gambel’s Quail, Red-tailed Hawk, and Turkey Vulture, but many other birds are easily recognized by experienced bird watchers. Reptiles include five species of rattlesnakes, Gila Monster, Desert Tortoise, and an assortment of lizards (Tiger Whiptail and Zebra-tailed lizard most frequently seen). The large Colorado River Toad may be seen during the monsoon season.

[prepared by Royce Ballinger, Board of Directors, Friends of Ironwood Forest]
Natural History of IFNM major areas

Avra Valley This valley just west of the Santa Cruz River borders the eastern edge of the IFNM. Some valley agriculture occurs, but natural areas of IFNM are dominated by Velvet Mesquite trees and Creosote bushes. A total of 246 plant taxa are recorded in this Sonoran Desert scrubland. Blue Paloverde and large Velvet Mesquite trees with an occasional Desert Hackberry and Wolfberry are common along the major washes as well as a diversity of lush bushes. Prickly Pear Cacti and Burroweed may be common in overgrazed areas, with abundant spring flowers.

Roskruge Mountains This is a long range oriented south to north in the southern part of IFNM. Its main body extends south of the IFNM where its maximum altitude is 3,717’. A total of 327 taxa of plants are recorded and 21 taxa are unique in IFNM to this area. This is the only area in which an Organ Pipe Cactus occurs. Typically found west and south into Baja California, one large old OPC represents the second most easterly found plant of this species in the U.S. Some of the largest ironwood trees are found in these mountains.

Pan Quemado Mountains The “burnt bread mountains” are a small range near the southeastern border of IFNM east southeast of the Waterman Mountains. Two of the 276 plant taxa here are unique to IFNM.

Waterman Mountains These complex mountains, with considerable limestone, lie south of the larger Silver Bells. A total of 312 plant taxa are recorded with 17 that are found in IFNM only here including Desert Agave, Yellow Trumpet-bush of tropical affinity, Canotia (one of three Arizona plants called Crucifixion Thorn that are more common below the Mogollon Rim), and Turk’s Head Cactus (Nicol’s variety here is on the endangered species list). The Elephant Tree (of Baja California and Sonora Mexico) reaches its eastern-most U.S. limit here.

Silver Bell Mountains Only the eastern slopes of these largest mountains in the area are in IFNM. Its western slopes are outside the monument and heavily altered by the copper mining operation that started at the end of the 19th century. The highest elevation here is 4,195’. Plant taxa number 332 (56% of those in IFNM) with 7 plants unique in IFNM found only here. Until 1984 there was a permanent water stream in the Silver Bells but extensive mining killed the source which has no doubt affected both plant and animals distributions, especially frogs. The Arizona (Banana) Yucca is found as well in a rare vegetation association, a Jojoba plant chaparral, on the north slope of the Silver Bell Mountains.

Ragged Top This iconic peak, at 3907’ and its smaller adjacent Wolcott Peak contain some of the most interesting plants and animals. There are 410 plant taxa (69% of the IFNM flora) including a few Shrub Live Oaks and a tropical plant of the four o’clock flower family, Pisonia capita, found nowhere else in the U.S. A herd of Desert Mountain Bighorn Sheep occur here and these range south into the Silver Bell and Waterman Mountains. The Chuckwalla and Desert Iguana reach their southeastern distributional limit here. The Desert Tortoise is common here and on several adjacent mountain slopes such as the Waterman, Silver Bell and West Silver Bell Mountains.

Sananiego Hills The low hills north of Ragged Top have 252 plant taxa but only one unique species, an exotic weed. Ironwood, Saguaros, Foothill Paloverde, and many cholla species dominate the slopes as elsewhere in IFNM.

West Silver Bell Mountains These mountains west of the main Silver Bell Mountains are relatively low (2947’). They have 213 plant taxa but only one unique species, a grass.

Sawtooth Mountains These mountains extend along the northwestern edge of the monument and are not easily accessible from Avra Valley roads. They are very dry (only 9” per year) with 323 taxa including 22 unique to IFNM. A distinctive sand-hills area and its associated biota occur near the northwest border of IFNM.

Aguirre Valley This valley occurs to the west of the Sawtooth Mountains south to the Silver Bells. It has 165 taxa, including one unique species, a barrel cactus (Ferocactus emoryi).
Ferns & Allies

Pteridaceae
- *Astrolepis cochisensis*
- *Astrolepis ionesii*
- *Astrolepis sinuata*
- *Cheilanthes linheimeri*
- *Cheilanthes villosa*
- *Cheilanthes wrightii*
- *Cheilanthes yavapense*
- *Notholaena standleyi*
- *Pellaea truncata*

Selaginellaceae
- *Selaginella arizonica*

Gymnosperms

Ephedraceae
- *Ephedra nevadensis*

Angiosperms: Dicots

Acanthaceae
- *Carlomartia arizonica*
- *Justicia longii*

Aizoaceae
- *Trianthema portulacastrum*

Amaranthaceae
- *Amaranthus fimbriatus*
- *Amaranthus palmeri*
- *Amaranthus xtcuconensis*
- *Tidestromia lanuginosa*

Apiaceae
- *Bowlesia incana*
- *Daucus pusillus*
- *Spermolepis echinata*

Apocynaceae
- *Asclepias nyctaginifolia*
- *Haplophyton cimoidium*
- *Metastema arizonica*
- *Matelea parviflora*

Aristolochiaceae
- *Aristolochia watsoni*

Asteraceae
- *Acourtia nana*
- *Acourtia wrightii*
- *Adenophylla porphyroloides*
- *Ambrosia ambrosoides*
- *Ambrosia confertiflora*
- *Ambrosia deltoidea*
- *Ambrosia dumosa*
- *Bahia absinthifolia*
- *Baileya multiradiata*
- *Brickellia baccharidea*
- *Brickellia couleri*
- *Calycoseris wrightii*
- *Chaenactis carphoclinia*
- *Encelia farinosa*
- *Erigeron divergens*
- *Eriophyllum lanosum*
- *Eupatorium solidaginifolium*
- *Evax multicaulis*
- *Gymnosperma glutinosa*
- *Heterotheca psammophila*
- *Isocoma tenuisecta*
- *Machaeranthera gracilis*
- *Malacoctrix sonorens*
- *Monoptilon bellifolius*
- *Parthenium incanum*
- *Pectis papposa*
- *Porophyllum gracile*
- *Psilostrophe cooperi*
- *Rafinesquia neomexicana*
- *Senecio lemmontii*
- *Senecio monensis*
- *Sochus oleraceus*
- *Stephanomeria pauciflora*
- *Stylocline micropoides*
- *Thymophylla pentachaeata*
- *Trixis californica*
- *Xanthisma spinulosum var. gooddingii*
- *Zinnia acerosa*
Boraginaceae
  Amsinckia menziesii
  Amsinckia tessellata
  Cryptantha barbigera
  Cryptantha pterocarpa
  Harpagonella palmeri
  Lappula redowskii
  Pectocarya platycarpa
  Pectocarya recurvata
  Tiquilia canescens

Brassicaceae
  Boechera perennens
  Caulanthus lasiophyllus
  Descurainia pinnata
  Draba cuneifolia
  Lepidium lasiocarpum
  Physaria gordonii
  Sisymbrium irio
  Streptanthus carinatus
  Thysanocarpus curvipes

Burseraceae
  Bursera microphylla

Cactaceae
  Carnegiea gigantea
  Cylindropuntia acanthocarpa
  Cylindropuntia acanthocarpa
  × C. leptocaulis
  Cylindropuntia bigelovii
  Cylindropuntia fulgida var. fulgida
  Cylindropuntia fulgida var. mammillata
  Cylindropuntia leptocaulis
  Cylindropuntia spinosior
  Echinocactus horizonthalonius var. nicholii
  Echinocereus fasciculatus
  Echinocereus nicholii
  Ferocactus cylindraceus
  Ferocactus wislizeni
  Mammillaria grahamii
  Opuntia chlorotica
  Opuntia engelmannii
  Opuntia engelmannii × phaeacantha
  Opuntia macrocentra
  Opuntia phaeacantha var. flavispina
  Opuntia phaeacantha var. major

Peniocereus greggii

Campanulaceae
  Nemacladus glanduliferus

Cannabaceae
  Celtis pallida

Capparidaceae
  Koebelina spinosa

Caryophyllaceae
  Hemiaria cinerea
  Silene antirrhina

Celastraceae
  Canotia holacantha

Chenopodiaceae
  Atriplex canescens
  Atriplex elegans
  Chenopodium murale
  Chenopodium neomexicanum
  Salsola iberica

Convolvulaceae
  Evolvulus alsinoides
  Ipomoea hederacea

Crassulaceae
  Graptopetalum rusbyi

CROSSOSOMATAECE
  CROSOSOMA BIGELOVII

Euphorbiaceae
  Bernardia incana
  Croton sonora
  Ditaxis lanceolata
  Ditaxis neomexicana
  Euphorbia abramsiana
  Euphorbia arizonica
  Euphorbia capitellata
  Euphorbia crijana
  Euphorbia florida
  Euphorbia hyssopifolia
  Euphorbia micromera
Euphorbiaceae (con’d)
Euphorbia pediculifera
Euphorbia revoluta
Euphorbia setiloba
Jatropha cardiophylla
Tragia nepetaefolia

Fabaceae
Acmsion brachycarpus
Acmsion maritimum var. brevivexillus
Acmsion strigosus
Astragalus nuttalianus
Calliandra eriophylla
Dalea mollis
Lupinus sparsiflorus
Marina parryi
Nissolia schottii
Onkea tesota
Parkinsonia floridana
Parkinsonia microphylla
Prospis velutina
Senegalia greggii
Senna covesii
Vachellia constricta
Vicia ludoviciana

Fouquieriaceae
Fouquieria splendens

Geraniaceae
Erodium cicutarium
Erodium texanum

Hydrophyllaceae
Eucrypta chrysanthemifolia
Eucrypta micrantha
Nama hispidum
Phacelia coerulea
Phacelia crenulata
Phacelia distans
Pholistoma auriun

Krameriaeeae
Krameria bicolor
Krameria erecta

Lamiaceae
Hedeoma nana
Hypnus emoryi
Monardella arizonica
Salvia columbarae
Teucrium cubense

Linaceae
Linum lewisii
Linum usitatissimum

Loasaceae
Mentzelia affinis
Mentzelia involucrata
Mentzelia multiflora

Malpighiaceae
Janusia gracilis

Malvaceae
Abutilon coahuila
Abutilon incanum
Abutilon malacum
Averia compacta
Averia microphylla
Herissantia crispa
Hermannia pauciflora
Hibiscus coultii
Hibiscus denuudatus
Horsordia newberryi
Sphaeralcea ambigua
Sphaeralcea coulteri
Sphaeralcea emoryi

Nyctaginaceae
Allionia incarnata
Boerhavia wrightii
Commicarpus scandens
Mirabilis laevis

Oleaceae
Menodora scabra

Onagraceae
Camissonia boothii
Camissonia chamaenerioides
Oenothera primiveris
Orobanchaceae
Castilleja exerta

Phrymaceae
Mimulus rubellus

Plantaginaceae
Maurandya antirrhiniflora
Penstemon parryi
Plantago fastigiata
Plantago rhodosperma
Plantago patagonica

Polemoniaceae
Eriastrum diffusum
Gilia flavocinta ssp. australis
Gilia stellata
Linanthus bigelovii

Polygalaceae
Polygala macadenia

Polygonaceae
Chorizanthe brevicornu
Chorizanthe rigida
Eriogonum abertianum
Eriogonum deflexum
Eriogonum inflatum
Eriogonum thomasii
Eriogonum trichopes

Portulacaceae
Callandrinia ciliata
Talinum aurantiacum

Primulaceae
Androsace occidentalis

Ranunculaceae
Anemone tuberosa
Delphinium scaposum

Resedaceae
Oligomeris linifolia

Rhamnaceae
Condalia warnockii var. kearneyana

Ziziphus obtusifolius

Rubaiaceae
Galium proliferum
Galium stellatum

Solanaceae
Datura discolor
Lycium berlandieri
Lycium parishii
Nicotiana trigonophylla
Physalis sp.
Solanum elaeagnifolium

Urticaceae
Parietaria hespera

Verbenaceae
Aloysia wrightii
Tetracela coulteri
Verbena neomexicana

Violaceae
Hybanthus verticillatus

Viscaceae
Phorodendron californicum

Zygophyllaceae
Fagonia laevis
Kallstroemia californica
Larrea tridentata

Angiosperms: Monocots

Asparagaceae
Agave deserti
Dichlostemma pulchellum
Yucca arizonica

Amaryllidaceae
Allium macroptetalum

Poaceae
Aristida adscensionis
Aristida purpurea var. nealleyi
Aristida ternipes var. ternipes
Bothriochloa barbinodis
Poaceae (con’d)
Bouteloua aristidoides
Bouteloua barbata
Bouteloua curtipendula
Bouteloua eriopoda
Bouteloua repens
Bouteloua trifida
Bromus carinatus
Bromus rubens
Cottea pappophoroides
Cynodon dactylon
Dasycichloa pulchella
Digitaria californica
Enneapogon cenchroides
Enneapogon desvauxii
Eragrostis ciliaris
Heteropogon contortus
Hilaria helangeri
Hopia obtusa
Hordeum murinum ssp. glaucum
Leptochloa panacea ssp. brachiata
Muhlenbergia microspatula
Muhlenbergia porteri
Panicum hallii
Panicum hirticaule
Pappophorum vaginatum
Pennisetum ciliare
Phalaris minor
Poa bigelovii
Schismus barbatus
Setaria leucopila
Sporobolus contractus
Sporobolus cryptandrus
Tridens muticus
Trisetum interruptum
Urochloa arizonica
Vulpia octoflora

Xanthorrhoeaceae
Aloe barbadensis
Watermain 3/Limestone Sea
Calcium carbonate
alkali/salty soils
E.T. N.T.H.C.

B.C.I./BIM Agreement Total

April 4th
Manville