Mojave and Colorado Deserts Biosphere Reserve

Periodic Review

September 2016

The United Nations Man and the Biosphere Program

Submitted by:

Josh Hoines, Death Valley National Park

And

Jeff Manning, Ph.D., California State Parks Colorado Desert District

Acknowledgements

Discovering a way forward to continue having the Mojave and Colorado Deserts Biosphere Reserve be part of the World Network of Biosphere Reserves has been both a laborious and productive journey, and would not have been possible without the contributions of many.

We deeply appreciate the following individuals and groups who helped us find our way forward through sharing knowledge regarding the Man and the Biosphere Program, as well as past research, management, conservation, education, and development activities in the BR:

Members of Death Valley and Joshua Tree National Parks, especially *Michael Vamstad* and *Kelly Fuhrmann*. Your insights contributed greatly to the development of this report.

Death Valley and Joshua Tree National Parks partners, especially Cameron Barrows, Center for Conservation Biology and *Jim Andre* and *Tasha LaDoux* of the Sweeney Granite Mountains Desert Research Center for tracking and facilitating research across the California Deserts.

Members of Anza-Borrego Desert State Park, especially *Robin Connors* (Archaeologist), *Lyn Murray* (Paleontologist), *Gina Moran* (Senior Environmental Scientist) and *Kathy Dice* (Superintendent); with deep appreciation for *L.Louise Jee* (GIS Analyst) for GIS mapping and creating maps of resources in and boundaries of core, buffer, and transition areas throughout the BR since its inception and *Dennis Stephen* (Interpretive Specialist) for developing the new BR webpage and social media on google+. Special thank you to *Gina Moran* for deeply engaging in the process and providing critical insights and edits to early drafts.

Retired members of Anza-Borrego Desert State Park, especially *Dr. Michael L. Wells* (Retired Colorado Desert District Superintendent), *Mark C. Jorgensen* (Retired Anza-Borrego Desert State Park Superintendent), *George T. Jefferson* (Retired Paleontologist), and *Dr. Joan Schneider* (Retired Archaeologist) for providing decades of institutional knowledge.

Anza-Borrego Desert State Park partners: Anza-Borrego Foundation (*Paige Rogowski*, Executive Director), University of California Irvine Steele/Burnand Anza-Borrego Desert Research Center (*Jim Dice*, Reserve Manager), University of California Riverside (*Dr. Al Muth*, Philip L. Boyde Deep Canyon Desert Research Center and *Cameron Barrows*, Center for Conservation Biology). We extend sincere gratitude to *Jim Dice* for providing extensive editorial comments in earlier drafts that significantly improved this report.

Santa Rosa and San Jacinto National Monument employee *Brian Quigley*. Thank you Brian for providing insights to the National Monument and participating in the process during your detail.

United Nations Educational, Scientific and Cultural Organization

Man and the Biosphere Programme

PERIODIC REVIEW FOR BIOSPHERE RESERVE

[September 2016]

INTRODUCTION

The UNESCO General Conference, at its 28th session, adopted Resolution 28 C/2.4 on the Statutory Framework of the World Network of Biosphere Reserves. This text defines in particular the criteria for an area to be qualified for designation as a biosphere reserve (Article 4). In addition, Article 9 foresees a periodic review every ten years, based on a report prepared by the concerned authority, on the basis of the criteria of Article 4 and forwarded to the secretariat by the State concerned. The text of the Statutory Framework is given in the third annex.

The form which follows is provided to help States to prepare their national reports in accordance with Article 9 and to update the data available to the Secretariat on the biosphere reserve concerned. This report should enable the International Coordinating Council (ICC) of the MAB Programme to review how each biosphere reserve is fulfilling the criteria of Article 4 of the Statutory Framework and in particular the three functions. It should be noted that it is requested, in the last part of the form (Criteria and Progress Made), to indicate how the biosphere reserve fulfills each of these criteria.

The information presented on this periodic review will be used in a number of ways by UNESCO:

(a) for examination of the biosphere reserve by the International Advisory Committee for Biosphere Reserves and by the Bureau of the MAB International Coordinating Council;

(b) for use in a world-wide accessible information system, notably for the UNESCO-MABnet and publications, facilitating communication and interaction amongst persons interested in biosphere reserves throughout the world.

Kindly indicate if any part of this report should remain confidential.

The form consists of three parts:

- Part one is a summary highlighting the main changes in the biosphere reserve during the reporting period.
- Part two is more descriptive and detailed, referring to the human, physical and biological characteristics as well as to the institutional aspects.
- Part three consists of two Annexes (A): the first Annex (A.1) will be used to update the directory of biosphere reserves on the MABnet. The second annex will be used to provide promotion and communication materials of the biosphere reserve (A.2).

The third annex comprises the Statutory Framework for the World Network of Biosphere Reserves.

Please provide as many quantitative data as possible as well as supporting documentation to complete the information provided, especially:

- Map(s) clearly showing the zonation (see in particular 2.3.1);
- The legal texts for the different zones.

The form should be completed in English, French or Spanish. Two copies should be sent to the Secretariat, as follows:

1. The original hard copy, with the original signatures, letters of endorsement, zonation map and supporting documents. This should be sent to the Secretariat through the Official UNESCO channels, i.e. via the National Commission for UNESCO and/or the Permanent Delegation to UNESCO.
2. An electronic version (on diskette, CD, etc.) of the periodic review form and of maps (especially the zonation map). This can be sent directly to the MAB Secretariat:

UNESCO
Division of Ecological and Earth Sciences
1, rue Miollis
F-75732 Paris Cedex 15, France
Tel: +33 (0)1 45 68 40 67
Fax: +33 (0)1 45 68 58 04
E-mail: mab@unesco.org
www.unesco.org/mab

Marker found on doorstep of a historic mining cabin within Death Valley National Park

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PART I: SUMMARY

The United Nations Educational, Scientific and Cultural Organization launched the Man in the Biosphere Program in 1971 to establish a scientific basis for the improvement of relationships between people and their environments. Its World Network of Biosphere Reserves, which now includes 669 sites in 120 countries, promotes the incorporation of biodiversity conservation and ecosystem management activities into sustainable development. This opportunity for U.S. biosphere reserves is especially valuable with respect to cooperation between the U.S. and its northern and southern neighbors, as well as other countries that contain similar ecological conditions. This periodic review implements the provisions set forth in the Statutory Framework of the World Network of Biosphere Reserves that encourage countries to elaborate and implement national criteria for biosphere reserves and to take into account the diversity of national and local situations. An important goal of U.S. biosphere reserves is to serve as models of voluntary collaboration in land management and sustainable development by securing the support and involvement of local people. Therefore, this periodic review, like others from U.S. biosphere reserves, focuses on how the reserve performs the following functions through voluntary cooperative approaches involving local people and their elected officials:

1. Conservation – contribute to the conservation of landscapes, ecosystems, species and genetic variation;

2. Development – foster economic and human development which is socially, culturally, and ecologically sustainable;

3. Logistic support – facilitate local demonstration projects, environmental education and training, and research and monitoring related to local, regional, and global opportunities for conservation and sustainable development.

a) **Name of the biosphere reserve:** Mojave and Colorado Deserts Biosphere Reserve
b) **Country:** United States
c) **Year of designation:** 1984
d) **Year(s) of periodic review(s):** First submission 2014; this is a resubmission in 2016.
e) **Previous recommendation(s) made by the International Co-ordinating Council (MAB- ICC), if applicable:**

1. An updated periodic review report using the official periodic review form.

2. A zonation map showing a clearly defined core area, buffer zone and transition area.

f) **What follow-up actions are completed and if not completed/initiated, please provide justifications.**

To address the general issues associated with U.S. conformance to UNESCO MAB policies, we have completed a trip to the UNESCO MAB Program Workshop held at Estes Park, Colorado, U.S. in August 2016. Specifically for the Mojave and Colorado Deserts Bioshere Reserve, we reconstructed a group of reserve authorities to backfill vacancies created by the retirement of previous authorities, conducted a rapid assessment of the available information

pertaining to the 1970-1984 1st generation MAB Prioritoried Conservation, MAB 1984 introduction of people as part of the Biosphere, and the 2005 Seville Strategy. We further brainstormed a way forward, and made a coordinated effort to update all aspects of the report, including a zonation map.

g) **Update on the implementation of measures to achieve the objectives of the biosphere reserve.**

This periodic review submission is in response to comments provided on the unapproved 2013 submission. This report is our first attempt at the long form and the first comprehensive documentation under the 2005 Seville Strategy of the UNESCO Program since the 1984 designation.

h) **Briefly describe the process by which the current periodic review has been conducted:**

This Mojave and Colorado Deserts Biosphere Reserve Periodic Review resubmittal is our first significant attempt to become inline with the expectations of the UNESCO MAB program since the initiation of the Exit Strategy. As such, this newly established group of authorities have spent most of the last 6 months working diliegently with Secretariat, members of the Rocky Mountain Biosphere Reserve, the ICC, and others to find a way forward – particalurly in addressing how the UNESCOI MAB Statutary Framework can be interepretted to be in alignment with the U.S. Constitution and the laws/policies that govern land management agencies in the U.S. It is only in these last weeks of this effort, after attending the UNESCO MAB workshop in Estes Park, Colorado, that we have made significe progress on this documentation process for the review. This effort consequently has largely been indirect, as interpreted throught outcomes of public meetings, public scoping, existing agreements, environmental compliance processes, reports, outcomes from annual meetings, and staff accomplishments. This indirect context is rigorous and thorough because public involvement in environmental, conservation, and green development is comprehensive in the BR. There has been direct contact and discussion with other areas of partnership and collaboration and a reaffirmation of our agreements since the 2013 submission. Additionally, constructive discussions and contributions from within the National Park Service, California State Parks and Recreation, Bureau of Land Management authorities responsible for management of the Core and Managed Use Areas, as well as the Univesity of California and partners have added context to this document. Once the Mojave and Colorado Deserts Biosphere Reserve finds a way forward within the MAB program, we will focus on more direct and meaningful reviews over a longer period of time.

i) **Area and spatial configuration:**

	Previous report (nomination form or periodic review) and date	Proposed changes (if any)
Area of terrestrial Core Area(s)	4,839,716 acres	Increase to 5,108,133 acres*
Area of terrestrial Buffer Zone(s)	15,446,189 acres	Decrease to 15,260,745 acres
Area of terrestrial Transition Area(s)	5,631,883 acres	Decrease to 5,513,985 acres
Area of marine Core	0	0

Area(s)		
Area of marine Buffer Zone(s)	0	0
Size of marine Transition Area(s)	0	0

* Same 3 core areas, but Anza Borrego Desert State Park core area enlarged through land acquisition, Death Valley National Monument core area redesignated as Death Valley National Park that was enlarged to 3,372,402 acres, and Santa Rosa Mountains Wildlife Management Area redesignated as Santa Rosa Mountains National Monument that was enlarged to 272,000 acres.

j) **Human population of the biosphere reserve:**

The BR utilizes established national standards for human population census within the counties in which the BR is present. Although not perfect, it affords us an accurate representation of a number and trend in which to work with. The Mojave and Colorado Deserts Biosphere Reserve was designated in within seven counties (Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino, San Diego). Because these counties cross over among the buffer, and transition areas, we are confined to assigning these county-level census data to these areas combined (Table 1).

Table 1.

	Previous report (nomination form or periodic review) and date	At present (please state date of census or other source)
Core Area(s) (permenant and seasonally)	0-Year 2004 Visitation = few	0-Year 2014 Visitation = few
Buffer and Transition Areas		
Imperial	152,259	179,091
Inyo	18,578	18,410
Kern	736,296	874,589
Los Angeles	9,793,263	10,116,705
Riverside	1,856,542	2,329,271
San Bernardino	1,899,065	2,112,619
San Diego	2,930,007	3,263,431

k) **Budget (main sources of funds, special capital funds) and international, regional or national relevant projects/initiatives carried out or planned.**

Table 2.

Budget in the previous report (nomination form or periodic review) and date	Current budget
Not previously reported	~$20 million across the 3 Core units.

l) **International, regional, multilateral or bilateral framework of cooperation. Describe, where applicable, the contribution of the biosphere reserve to achieve objectives and developing mechanisms that contribute to the implementation of international or regional bilateral or multilateral agreements, conventions, etc.**

The Mojave and Colorado Deserts Biosphere Reserve contains several frameworks of cooperation, including international, regional, multilatueral, and cooperation agreements. Below, we highlight the Desert Soutwest Cooperative Ecosystem Studies Unit, National Park Service Mojave Desert Inventory and Monitoring Network, U.S. Fish and Wildlife Service California Landscape Consevation Cooperative, Southwest Climate Science Center, California State Parks Inventory, Monitoring, and Assessment Program, and International Cooperation with Mongolian Parks.

Desert Southwest Cooperative Ecosystem Studies Unit
The Desert Southwest Cooperative Ecosystem Studies Unit is a consortium of multiple federal agencies and partner institutions formed to address natural and cultural resource issues. Partners include universities, non-profit conservation organizations, regional flood control districts, historian organizations, and museums. Its mission is to execute and provide collaborative research, eduction, and technical assistance addressing desert ecosystem resource issues to local, regional, national, and international levels. Key elements provided by this Unit include a host university in charge of program administration, a federal managers committee responsible for program evaluation, and a 17.5% cap on indirect costs for funds provided to university research distributed through the Unit. Through partnerships, it establishes interdisciplinary programs that involve natural resources, cultural resources, and social sciences information, with emphasis on involving communities and under-represented groups.

Learn more from: www.cesu.psu.edu/unit_portals/DESO_portal.htm

National Park Service Mojave Desert Inventory and Monitoring Network
The Mojave Desert Network is one of 32 vital signs monitoring networks across the National Park Service. This Network is comprised of 8 units, including Death Valley National Park, Joshua Tree Park. The 8 Mojave Desert Network parks are spread across the Mojave Desert regions of California, Nevada, and Arizona. The primary goals of the Inventory and Monitoring Program are to inventory natural resources in National Park units, monitor park ecosystems, establish natural resource inventory and monitoring as a standard practice, integrate natural resource inventory and monitoring information into National Park Service planning, management, and decision making, and share accomplishments and information with other natural resource organizations and form partnerships.

Learn more from: http://science.nature.nps.gov/IM/units/romn/index.cfm

U.S. Fish and Wildlife Service California Landscape Consevation Cooperative
Conserving natural and cultural resources is essential to the Mojave and Colorado Deserts Biosphere Reserve core areas, and critical to sustaining human health and quality of life. The Mojave and Colorado Deserts Biosphere Reserve is one of 22 U.S. Fish and Wildlife Service's Landscape Conservation Cooperatives designed to integrate science and management to address climage change and other landscape-scale issues. Landscape Conservation Cooperatives work to ensure the sustainability of economy, land, water, wildlife, and cultural resources by building a newtowrk that is adaptive, collaborative, holistic, and grounded in science. These cooperatives bring together federal, state, and local governments, as well as tribes and first nations, non-governmental organizations, universities, and interested public and

private organizations. Our partners in the California Landscape Consevation Cooperative collaboratively work to identify best practices, connect efforts, and identify science gaps through conservation planning and design.

Learn more from: http://lccnetwork.org/about

Southwest Climate Science Center

The Southwest Climate Science Center is onoe of 8 regional Department of Interior Climate Science Centers across the United States. It provides objective scientific information, tools, and techniques that resource managers and other interested parties can apply to anticipate, monitor, and adapt to climate change impacts in the southwestern United States. Climate Science Centers conduct research at local, regional, and national scales, produce products that include climate, water, and ecosystem modeling, are built on partnerships between the federal government and universities, provide educational opportunities, and work with tribes and indigenous communities.

Learn more at: https://www.doi.gov/csc/southwest

California State Parks Inventory, Monitoring, and Assessment Program.

The California State Parks Inventory, Monitoring, and Assessment Program provides goals, guidance, and standards for the California Department of Parks and Recreation's efforts to systematically evaluate the vegetation, wildlife, and physical natural resources of lands administered under the State Parks System. The program conducts monitoring of endangered species, water quality, and other natural resources to detect changes and trends over time. The program's team of scientists is housed in Sacromento, as well as service centers and park units throughout California.

Learn more at: www.parks.ca.gov/?page_id=836

International Cooperation with Mongolian Parks

The Mojave and Colorado Deserts Biosphere Reserve Core Area authorities have engaged in international cooperation and agreements over the years to achieve objectives and developing mechanisms that contribute to the implementation of international conservation and park management. For example, the Death Valley National Park core area authorities hosted a delegation from Mongolia in the spring of 2013 to exchange management perspectives and strategies for the long-term protection of desert parks and biosphere reserves such as the Great Gobi National Park and biosphere reserve and Death Valley National Park. The Mongolian delegation included two high-level officials – State Secretary of the Ministry of Environment and Green Development Jamsran Batbold and Senior Officer in the Department of Protected Areas Management Avirmed Dolgormaa. They chose Death Valley because of the biosphere reserve status, the park's interwoven mining and conservation history, its ongoing work with the Bureau of Land Management in two states to accomplish regional landscape-level conservation planning, and the park's extensive and unique desert ecosystem.

Additionally, Anza-Borrego Desert State Park core area authorities, in cooperation with Anza-Borrego Foundation, Denver Zoo Foundation, Mongolian Academy of Sciences, and United Nations Development Program Special Protected Area Network, engaged in international conservation through developing a "Sister Park" relationship with Ikh Nartiin Chuluu Nature Reserve in Mongolia. The California State Park and Recreation Commission Resolution 8-2008 ratified this agreement to cooperate to the mutual benefit of both Ikh Nartiin and Anza-

Borrego Desert State Park, and the Governer of California, Arnold Schwartzenegger, provided a letter of appreciation to Anza-Borrego Desert State Park for establishing this relationship.

Learn more at:
https://www.parks.ca.gov/pages/712/files/Ano_Mongolia_Sisterpark_ResolutionMay2008.pdf

CALIFORNIA STATE PARK AND RECREATION COMMISSION

Resolution

WHEREAS, More that 13 percent of Mongolia's land is set aside in parks, nature reserves, and protected areas, and two written agreements have been signed in recognition of the Sister Park relationship between Anza Borrego Desert State Park™ and the Ikh Nartiin Chuluu Nature Reserve in Dalanjargal Soum of Mongolia; and

WHEREAS, These agreements were a "Contract of Cooperation" signed in 2006 and a Phase II Cooperative Agreement signed in 2007, and both documents were signed by Dalanjargal Soum Governor D. Bold and Anza-Borrego Desert State Park™ Superintendent Mark Jorgensen; and

WHEREAS, This partnership is an agreement to cooperate to the mutual benefit of both Ikh Nartiin and Anza-Borrego Desert State Park™; and

WHEREAS, ANZA-BORREGO DESERT STATE PARK™:

- Provides expertise to increase natural resource conservation in Ikh Nartiin Chuluu Nature Reserve through co-operation of the Governor's Office of Dalanjargalan Soum and Anza-Borrego Desert State Park™ of the USA,
- Supports conservation efforts to preserve natural and cultural resources in Ikh Nart,
- Supports the Denver Zoo Foundation in its efforts to develop interpretive & educational materials for Ikh Nart,
- Supports coordinated efforts to provide donated equipment to Ikh Nart rangers and researchers,
- Serves as subject matter expert to assist in planning & establishing visitor service facilities & in training of staff,
- Facilitates exchange of information, education & interpretation of Anza-Borrego Desert State Park™ for a Mongolian delegation who may wish to visit the United States,
- Sends a volunteer delegation to Ikh Nart in 2008 to assist Nature Reserve staff & the Soum governor with equipment, boundary signage, ranger training, public outreach, & engendering the Sister Park partnership; and

WHEREAS, DALANJARLALAN SOUM invites a volunteer delegation from Anza-Borrego Desert State Park™ to the Soum and will provide necessary transportation, communications, and working accommodations when the volunteer delegation from Anza-Borrego Desert State Park™ visits; and

WHEREAS, DALANJARLALAN SOUM plans to provide training pertaining to customs such as simple traditions and building Mongolian "yurts" in Anza-Borrego Desert State Park™ and possibly other California State Parks, and plans to assist Anza-Borrego Desert State Park™ in the acquisition of traditional Mongolian "yurts" as appropriate; and

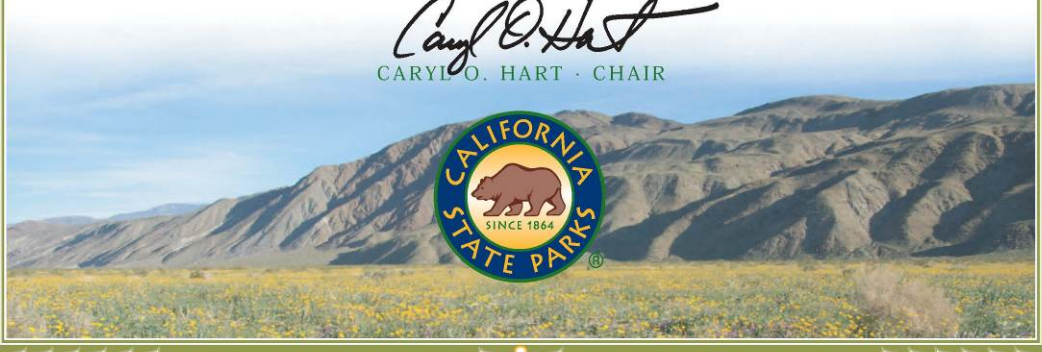
WHEREAS, This agreement is non-binding, represents no-cost to the California State Park System, and represents the Department's efforts to share knowledge, experience and visionary park management practices with the people of Mongolia.

NOW BE IT RESOLVED, That the California State Park and Recreation Commission hereby recognizes the formal Sister Park relationship between the Department, Anza-Borrego Desert State Park™ and Ikh Nartiin Chuluu Nature Reserve in Dalanjargal Soum of the North Province of Mongolia; and

BE IT FURTHER RESOLVED, That the Commission supports California State Parks' continuing efforts to provide opportunities and programs such as the Sister Park resolution between Anza Borrego Desert State Park™ and the Ikh Nartiin Chuluu Nature Reserve which supports the understanding of the natural world and of best park management practices as essential to the protection and appreciation of our natural and cultural resources.

RESOLUTION 8-2008 · ADOPTED AND PRESENTED
TO CALIFORNIA STATE PARKS DIRECTOR RUTH COLEMAN
THE 16TH DAY OF MAY, 2008

CARYL O. HART · CHAIR



PART II: PERIODIC REVIEW REPORT

1. BIOSPHERE RESERVE:

Colorado Desert vegetation greenup and Encelia flowers responding to rainfall.

1.1 Year designated: 1984

1.2 Year of first periodic review and of any following periodic review(s) (when appropriate):

First submission 2013; this is a resubmission in 2016.

1.3 Follow-up actions taken in response to each recommendation from the previous periodic review(s) (if applicable), and if not completed/initiated, please provide justifications.

The United Nations Division of Ecological and Earth Sciences Man in the Biosphere Programme provided the following comment and recommendations regarding the 2014 periodic review in a letter to the Office of UNESCO Affairs, BIO, USDS, Washington, D.C., USA, dated May 6, 2014. The comment and recommendations stemmed from results of the deliberations of the International Advisory Committee for Biosphere Reserves.

Comment 1. The site did not meet the criteria in the Statutory Framework of the World Network of Biosphere Reserves.

Response: This updated periodic review describes the site in more detail, demontrating how it does conform to the 2005 Seville Strategy and Statutory Framework of the World Network of Biosphere Reserves, and that we have taken measures that deviate somewhat from this framework according to U.S. legislation in accordance with Article 4 of the Statutory Framework.

Recommendation 1. A zonation map with a clearly defined core area, buffer zone, and transition area.

Response: This updated periodic review includes a zonation map depicting core, buffer, and transition areas.

Recommendation 2. An updated periodic review using the official periodic review form for all units of the biosphere reserve.

Response: This updated review conforms to the official periodic review form

1.4 Other observations or comments on the above.

Staff from the Core Area units within the Mojave and Colorado Deserts Biosphere Reserve appreciate the opportunity to resubmit our periodic review. The U.S. response to the formal and informal comments provided by the UNESCO MAB Secretariat, ICC and member states, and Bureau represents our sincere intent to ensure that our biosphere reserves and associated periodic reviews satisfy the criteria contained in Article 4 of The Statutory Framework of the World Network of Biosphere Reserves (UNESCOMAB undated). The Mojave and Colorado Deserts BR was designated for inclusion in the Network by the ICC in accordance with Article 5 of the Statutory Framework, and continues to fulfill its obligations under the MAB Program to conserve biological diversity and sustainable use of its components, thus contributing to the objectives of the Convention on Biological Diversity and other pertinent conventions and instruments, as stipulated under Article 2 of the Statutory Framework. Our form emulates the traditional models of biosphere reserves, but is somewhat unconventional due to taking measures which are grounded in the laws of the United States. Collectively, our new approach results in real on-the-ground changes that are inline with the spirit of the MAB program and current definition following the 2005 Seville Strategy.

Since recieving the Man and Biosphere designation, the MAB program has evolved (Figure 1). This reserve fully complies with and meets all the criteria of a first generation reserve. As an first generation unit we fully comply with the spirit in which the designation was given. In this report we have listed several active and long running partnerships that our National Park has entered into in the context of our National Park work. Although our work is in line with the current concept of a Biosphere and its functions, the partnerships have not been entered into in the context of the existing Biosphere. For the purpose of the Biosphere, we aim to continue working with our partners and to engage them with the Biosphere objectives. This approach requires the Mojave and Colorado Deserts Man and Bioshpere Reserve to initiate a new education, collaboration and inclusion campaign with the goal of incorperating MAB language and branding into our current agreements and partnerships.

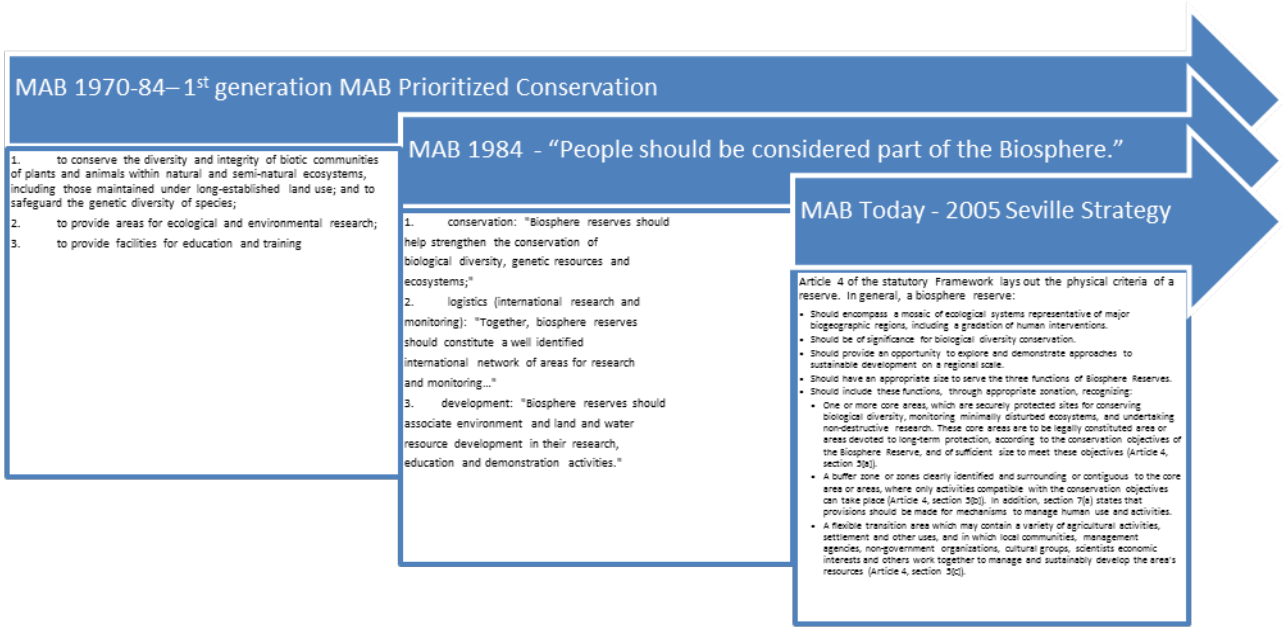


Figure 1 Evolution of the MAB Program

1.5 Describe in detail the process by which the current periodic review has been conducted:

1.5.1 Which stakeholders were involved?

This Mojave and Colorado Deserts BR Periodic Review resubmittal is the first significant attempt by this Biosphere Reserve to come into the alignment with the expectations of the UNESCO MAB program. The initiation of the Exit Strategy only came to our collective members this past March 2016. As such, we have spent most of the last four months working diligently to find a way forward – specifically addressing comments from the UNESCO MAB Secretariat. The Mojave and Colorado Deserts BR are modeling our response after the Rocky Mountains BR, since they have taken the lead to address how the Statutory Framework can be interpreted to be in alignment with the U.S. Constitution and the laws/policies that govern land management agencies. It is only in these last months of this effort, after our National Committee has been reconstituted and met, that we have been able to make progress on this documentation process for the review.

Stakeholders that were involved in conducting the current periodic review include: Death Valley National Park, Joshua Tree National Park, Anza-Borrego Desert State Park, Anza Borrego Desert Foundation, University of California Irvine, Bureau of Land Management, and University of California Riverside.

1.5.2 What methodology was used to involve stakeholders in the process (e.g., workshops, meetings, consultation with experts).

This is a large Biosphere Reserve and encompasses nearly 25 million acres. As such, the Core area units all maintain their own organization and staff to implement their respective enabling legislation and mission. Prior to this updated reporting period, staff from the Core Area units collaborated through a variety of outlets but did not have

regular discussions about the Man and Biosphere Reserve. Since March of 2016 we have had monthly calls engaging staff from each of the units as well as involvement from multiple collaborating University staff.

Given the short timeframe for this report update, per explanation in Section 1.5.1 of this document, involvement has largely been indirect as interpreted through outcomes of public scoping, public meetings, environmental compliance processes, existing agreements, reports, annual meeting outcomes and staff work. This indirect context is rigorous and thorough as public engagement in BR issues is comprehensive. There has been direct contact and discussion with our Areas of Partnership and Collaboration and a reaffirmation of our agreements since the 2013 submission. Additionally good discussions and contributions within and among the National Park Service and California State Parks management of core, buffer, and transition areas add context to this document. This process has allowed us to reengage in a larger landscape conversation, specifically in the context of the MAB reserve. We have committed to developing a Memorandum of Understanding regarding how each Core Area unit will engage in the discussions regarding our reserve moving forward. We have set a goal to discuss successes and issues within the reserve 2 to 3 times per year, and to have an annual Science Symposium that emphasizes the entire reserve. Our belief is that this level of cooperation will lead to new and invigorating insights across the Mojave and Colorado Desert.

1.5.3 How many meetings, workshops, etc. occurred throughout the process of conducting this review?

Specific to the Periodic Review update process, the reporting team has met in its entirety 6 times. During each of these meetings, sub-groups were formed and work assignments doled out. Members of the Reporting Team have continued to collaborate via email and phone in the interim periods. In a larger sense, during the 10 year period there have been literally hundreds of meetings and public outreach events. This engagement offers a 'check as you go' with the participants to see if we are meeting the needs and expectations of the public as well as government and non-governmental groups.

1.5.4 Were they well attended, with full and balanced representation?
(Describe participation and stakeholders).

Various events/activities carried out during the process of conducting this review over the past 10 years were advertised through formal public notices, to local experts, and to government and non-government groups that had regulatory oversite or interest regarding particular matters to achieve balanced representation. We do this because multiple tools provide the best opportunity to reach out to the broadest audience. Meetings have been generally well attended in the past, and in combination with public notices for comment as well as reaching out to folks directly (list attached) we have continuous feedback to improve. Additionally the three core areas meet annually to review a diversity of topics in common and share resources and staff throughout the year to achieve objectives held in common.

<u>Death Valley National Park Staff Preparers</u>
Mike Reynolds – Park Superintendent
Josh Hoines – Chief of Natural and Cultural Resources Management (Editor)
Kelly Fuhrmann – Former Chief of Natural and Cultural Resources Management
Terry Baldino –Chief of Interpretation (Retired)

Mike Cipra – Former Environmental Protection Specialist
Cheryl Chipman - Management Assistant (Retired)
Blair Davenport - Cultural Resources Program Manager
Richard Friese – Former Hydrologist
Linda Manning - Wildlife Biologist
Kevin Wilson - Aquatic Ecologist
John Stark - GIS Technician
Leah Bonstead – Former Archaeologist

Joshua Tree National Park
Michael Vamstad – Wildlife Biologist
Jason Theuer – Archaeologist
Dr. Cameron Barrows, University of California, Riverside, Center for Conservation Biology

Anza-Borrego Desert State Park
Norbert Ruhmke, Acting District Superintendent II
Kathy Dice, Anza-Borrego Desert State Park Sector Superintendent
Gina Moran, Senior Environmental Scientist
Dr. Jeff Manning, Environmental Scientist
Jim Dice, Reserve Manager, UCI Steele/Burnand Anza-Borrego Desert Research Center
Dennis Stephen, District Interpreter
Robin Connors, District Archaeologist
Dr. Lyndon Murray, District Paleontologist
George Jefferson, District Paleontologist Emeritus
L. Louise Jee, Research Analyst-GIS
Paige Rogowski, Executive Director, Anza-Borrego Foundation
Dr. Mike Wells, District Superindent (Retired)

Santa Rosa and San Jacinto National Monument (former Santa Rosa Mountains Wildlife Management Area)
Brian Quigley, Acting Monument Manager
Dr. Alan Muth, Reserve Director, UCR Philip L. Boyd Deep Canyon Desert Research Center

2. SIGNIFICANT CHANGES IN THE BIOSPHERE RESERVE DURING THE PAST TEN YEARS:

2.1 Brief summary overview: Narrative account of important changes in the local economy, landscapes or habitat use, and other related issues. Note important changes in the institutional arrangements for governance of the biosphere reserve area, and changes (if any) in the coordinating arrangements (including the biosphere reserve organization/coordinator/manager) that provide direction for the biosphere reserve. Identify the role of biosphere reserve organization/coordinator/manager in initiating or responding to these changes.

A significant change for the Mojave and Colorado Deserts BR during 2000 - 2014 review period is the turnover of personnel within authorties responsible for each core area. Key people who were involved with the designation process have since retired, and new personnel with designated authority are working through decades of paper and electronic files to learn about past activities and changes to the Mojave and Colorado Deserts BR since its designation. Through this process, and with recognition of the devolution of the reserve program in the U.S., these new personnel have considered whether the Mojave and Colorado Deserts BR, as

designated in 1984, continues to fit within the Biosphere Reserve model, as described in The Statutory Framework of the World Network of Biosphere Reserves (UNESCOMAB undated). The designated authories, through a series of meetings with stakeholders, previous retired personnel involved with the designation o fthe Mojave and Colorado Deserts BR, and members of this periodic review process, maintains that the Mojave and Colorado Deserts BR does fit within the Biosphere Reserve Program. As such, the Mojave and Colorado Deserts BR meets the objective of promoting and demonstrating a balanced relationship between humans and the biosphere by strengthening common understanding, communication, and cooperation at regional and international levels.

Coinciding with changes in the global economy during the first half of the reporting period, local economies across the Mojave and Colorado Deserts BR experienced growth, whereas they declined significantly between 2008 and 2014. Coinciding with this down turn in the economy, visitor use increased in the core areas (Joshua Tree National Park, Death Valley National Park, and Anza-Borrego Desert State Park) for reasons believed to be related to visitors traveling more locally rather than abroad, and because the status of the first two changed from national monuments to national parks.

The Mojave and Colorado Deserts BR landscape has experienced several significant environmental changes since 2004, particlarly in the form of increased drought, invasive pest species (i.e., insects and plants), all of which are influencing general wildlife habitat conditions and use, fire frequency and intensity, and above and below ground water resources for wildlife, recreation, and renewable and non-renewable energy development.

2.2 Updated background information about the biosphere reserve.

2.2.1 Updated coordinates (if applicable). If any changes in the biosphere reserve's standard geographical coordinates, please provide them here (all projected under WGS 84):

The Mojave and Colorado Deserts BR boundary has been modified to correspond with the Mojave and Colorado Deserts Ecoregion, and the Anza Borrego Desert State Park core area has been enlarged through a series of property acquisitions through stakeholder involvement.

Cardinal points:	**Latitude**	**Longitude**
Most central point	34° 59' 38.138" N	116° 25' 10.179" W
Southwestern point	32° 34' 56.480" N	118° 42' 46.400" W
Northwestern point	37° 22' 54.128" N	118° 48' 57.367" W
Northeastern point	37° 21' 26.240" N	113° 59' 18.672" W
Southeastern point	32° 33' 42.884" N	114° 9' 33.211" W

2.2.2 If necessary, provide an updated map on a topographic layer of the precise location and delimitation of the three zones of the biosphere reserve Map(s) shall be provided in both paper and electronic copies. Shape files (also in WGS 84 projection system) used to produce the map must also be attached to the electronic copy of the form.
If applicable, also provide a link to access this map on the internet (e.g. Google map, website).

We provide the following overview map of the location and delineation of the 3 zones in the Mojave and Colorado Deserts BR (Figure 2). Available at https://www.parks.ca.gov/?page_id=29306 .

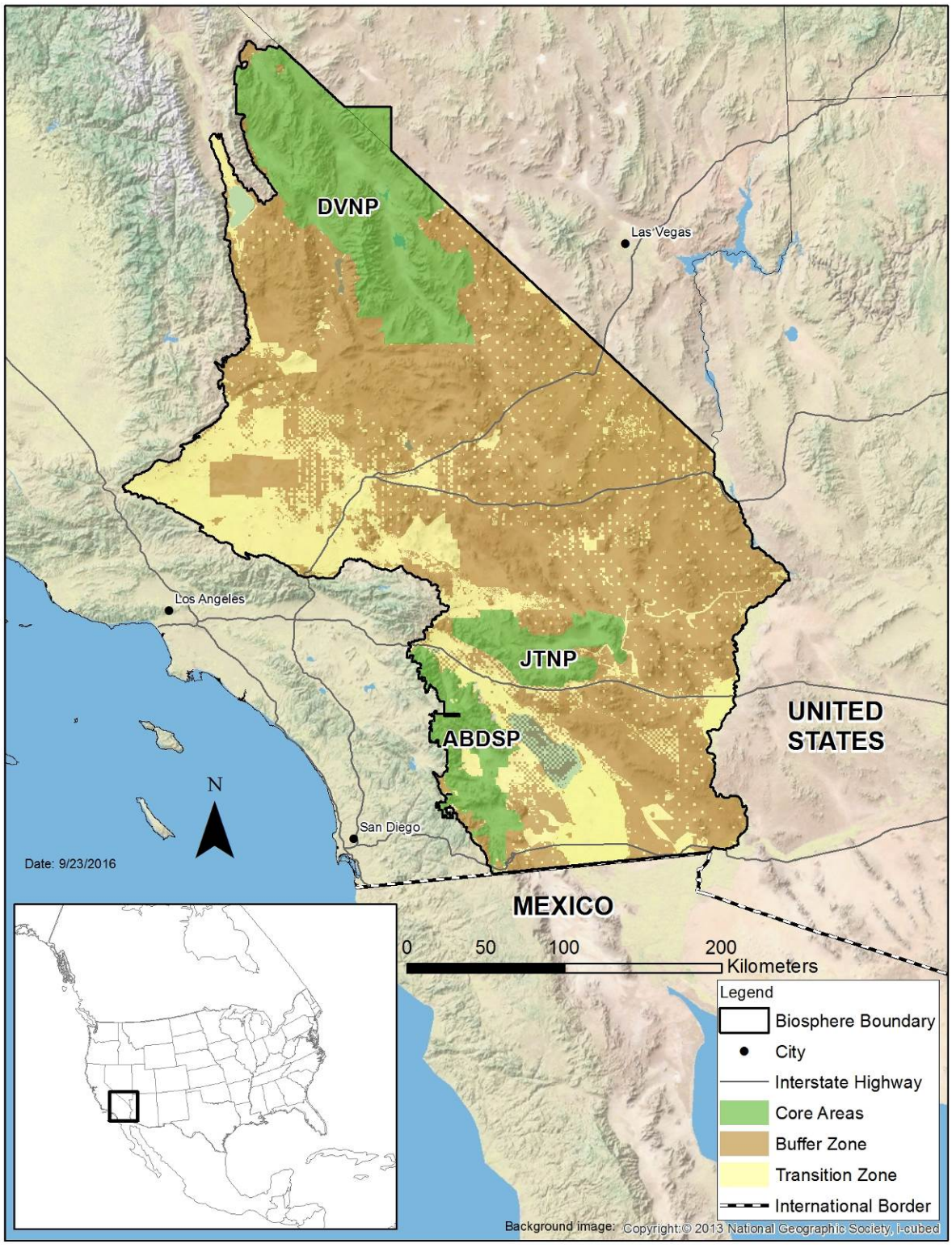


Figure 2. Mojave and Colorado Deserts Biosphere location, depicting core, buffer, and transition areas, United States, 2014.

2.2.3 Changes in the human population of the biosphere reserve.

The Mojave and Colorado Deserts BR intersects 8 counties in California within the U.S.; the human population within these counties experienced 0.83% average annual instantaneous rate of increase over the 10-year periodic review period (17,556,531 to 19,097,477; Figure 3a). The rate of annual change in the human population across all counties combined was positive every year, and highest from 2004-2005 (Figure 2b), at which point it fluctuated around 0.83 through 2014. This decline in growth rate coincided with inter-regional shifts in the population as people relocated for jobs and lower costs of living. Despite the slowed rate of growth, an increase occurred, growth occurred in urban areas outside, but near the biosphere reserve within the intersecting counties, such as San Diego and Los Angeles. This source of significiant growth raises the potential for increased pressure, disturbance, and challenges to sustainable development and conservation of the biosphere reserve's natural enviroments withn all three areas (e.g., air quality, water availability/quality, wildlife habitat, etc.).

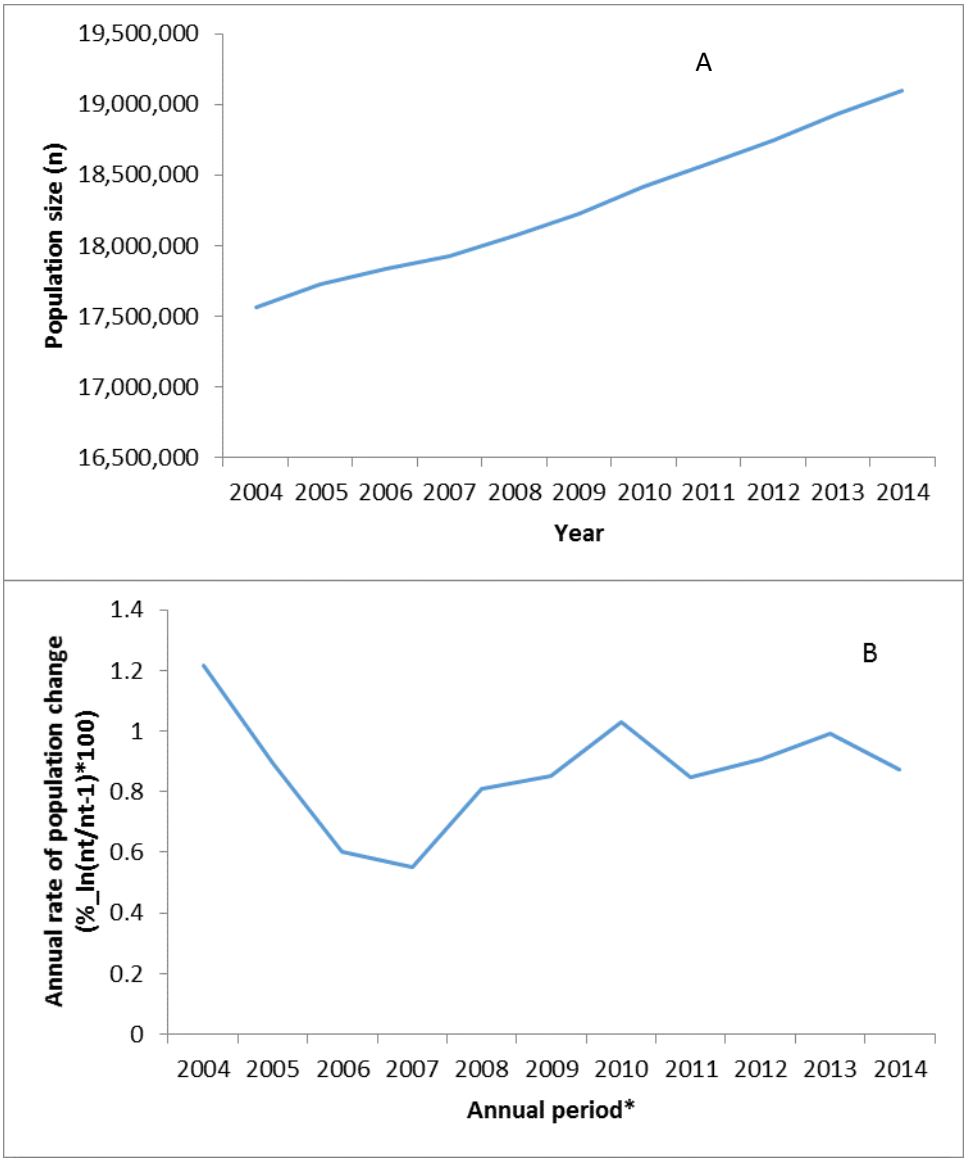


Figure 3. Annual human population size (A) and rate of change ($ln(n_t/n_{t-1})\times100$) (B) in the Mojave and Colorado Deserts Biosphere Reserve, United States. Annual period refers to 12-month calender year.

2.2.4 Update on conservation function, including main changes since last report.

(Note briefly here and refer to 4 below).

The juxtaposition of the 3 core areas across the biosphere reserve provide a conservation function by forming the foundation by which regional conservation planning efforts intended to protect biodiversity and genetic diversity can occur in order to geographically link these and other biologically important areas (see section 4 for details). Some of the significant mechanisms and changes have taken place since the Biosphere Reserve's 1984 designation (see section 4 for details), we highlight below:

1. The status of Death Valley and Joshua Tree National Monuments were elevated to National Parks under the California Desert Protection Act of 1994; this also increased the size of Death Valley National Park by 1.4 million acres and Joshua Tree National Park by 234,000 acres. This same bill added 7 million acres of wilderness in and out of the core areas, leading to greater resource protection in previously designated Biosphere Reserve buffer and transition areas.
2. The status of the Santa Rosa Mountains Wildlife Management Area was changed in 2000 to the Santa Rosa and San Jacinto National Monument, effectively increasing the size of this portion of the original Anza-Borrego Desert State Park core area by 280,000 acreas, and adding lands administered by the Bureau of Land Management and US Forest Service.
3. The size of the Anza-Borrego Desert State Park core area was enlarged by 15,574 acres through a series of land acquisitions, and the majority of this core area has been designated state wilderness, providing additional protection for natural resources.
4. Changes in buffer and transition areas include the designation of critical habitats for federally threatened and endangered species, designation of wilderness areas, and establishment of multiple and single species habitat conservation planning areas, including the Coachella Valley Multiple Species Habitat Consevation Plan area.

2.2.5 Update on the development function, including main changes since last report.

(Note briefly here and refer to 5 below).

Transition and Buffer areas within the Mojave and Colorado Deserts BR are some of the most renewable-energy rich locations in the United States and the world, with the potential to produce over 40,000 megawatts of renewable energy (San Diego State University Sustainable Energy Center, unpublished data). The transition areas within this desert biosphere reserve are currently being planned to function as significant sources of renewable geothermal, wind, and solar energy production. During the last few years, numerous solar energy projects have been proposed on During the last few years, numerous solar energy projects have been proposed on public lands administered by the Bureau of Land Management (BLM) throughout the California Desert. The Mojave and Colorado Deserts BR core areas participated in the identification of potential high resource conflict areas—ecologically rich areas, important wildlife movement corridors, habitats rich in biodiversity—to help the BLM avoid siting industrial-scale energy projects in areas that would disrupt ecological systems on a regional scale. For example, the Mojave and Colorado Deserts BR core areas actively participated in developing a BLM Solar Programmatic Environmental Impact Statement, providing resource information related to all three core areas. We are also participating in California BLM's Desert Renewable Energy Conservation Plan (DRECP), which is attempting to establish conservation areas along with priority areas for energy development. Recent events have positioned California's Imperial County to surge in renewable energy production, bringing also economic, social, and educational development. See section 5 for details.

Learn more at:

http://www.solareis.anl.gov/
http://www.drecp.org/
http://energy.gov/eere/geothermal/imperial-valley-geothermal-area

2.2.6 Update on logistic support function, including main changes since last report.
(Note briefly here and refer to 6 below).

As detailed in section 6, the three core areas have worked with partners during the periodic review period to develop a framework to initiate signficant increases in research, inventory, and monitoring. This has led to the core area authorities providing logistical support function to partners and through their own National Park Service or California State Parks research permit programs, which form the basis for a broad base of research activities. This support has enabled the core areas, partners, and researchers to complete various applied and pure research projects to address management needs and increase our understanding of various ecological concepts, principles, and theories across a variety of topics, including systematics, botany, entomopolgy, ichthiology, ornothology, herpitology, mammalogy, petrology, paleontology, and archaeology, as well as fish, wildlife, and air quality management.

2.2.7 Update on governance management and coordination, including changes since last report (if any) in hierarchy of administrative divisions, coordination structure.
(Note briefly here and refer to 7 below).

As noted in section 7, governance is particular to the designated authorities, and coordination is governed by agreements.

2.3 The authority/authorities in charge of coordinating/managing the biosphere reserve:
(Comment on the following topics as much as is relevant).

The primary authorities for the biosphere reserve are the National Park Service and California State Parks. These authorities are responsible for the management of core areas and associated wilderness areas, and continue to develop partnerships and engage land owners, resource managers, and other public land management agencies, such as the Bureau of Land Management and California Department of Fish and Wildlife across the buffer and transition areas to participate in regional-scale conservation and education activities attributed to the fragile desert systems in which they live. In our case, one partnership is to address the recovery of endangered Peninsualr bighorn sheep; the other is general land management and recreation opportunities. Additional details are provided in section 7.

2.3.1 Updates to cooperation/management policy/plan, including vision statement, goals and objectives, either current or for the next 5-10 years.

Per the description in section 2.3, plans are with the National Park Service and California State Parks. As such, our core area authorities have recently begun to discuss how to move forward with developing a Mojave and Colorado Deserts Biosphere Reserve Cooperation/Management Plan intented to last for many years. As described in section 2.3, we engage and have various agreements with various entities in our transition and buffer areas. Below is a general description of our plans:

Environmental Assessments
The National Environmental Policy Act (NEPA) of 1969 was created to ensure federal agencies, such as the National Park Service of which Death Valley and Joshua Tree National Park core areas are part of, consider the environmental impacts of their actions and decisions

on the natural and human environments. Federal agencies are required to systematically assess the environmental impacts of their proposed actions and consider alternative ways of accomplishing their missions, which are less damaging to and protective of the environment. NEPA Section 101(b) states "it is the continuing responsibility of the federal government to use all practicable means, consistent with other essential considerations of national policy" to avoid environmental degradation, preserve historic, cultural, and natural resources, and "promote the widest range of beneficial uses of the environment without undesirable and unintentional consequences."

An Environmetal Assessment (EA) is a planning tool under the NEPA process that is used to explore alternatives and determine whether those alternatives wil have significant impacts. EAs are made available to the public for review and comment. If an EA reveals no significant impact, a decision document is prepared and signed, whereas significant impacts will lead to the subsequent development of an Environmental Impact Statement (EIS) (see below).

Environmental Impact Statements
NEPA requires the preparation of an EIS whenever one of the National Park Serivce administored core areas proposes an action whose impactds on the natural and/or human environment may be significant. An EIS will include a range of alternatives that will be evaluated for potential impacts. EISs are made available for public review and comment, and the National Park Service core areas may proceed with a decision document (see below).

Decision Documents
If no significant impacts are determined in an EA, a preferred alternative is selected, and a Finding of No Significant Impact (FONSI) will be prepared. A FONSI is an explanation of why the selected action will not result in a significant impacts to natural or human environment. A FONSI is based on the EA and comments of agencies and the public, and signed by the Director of the National Park Service.

The decision document resulting from an EIS is referred to as a Record of Decision (ROD). The ROD describes the ultimate choice of an alternative, migitation measures to reduce impacts, and the decision rationale. The ROD is signed by the Regional Director of the National Park Service.

Environmental Impact Reports
The California Environmental Quality Act (CEQA) is California's broadest environmental law, and has a direct influence on some activities taken by the Anza-Borrego Desert State Park core area. Similar to NEPA, CEQA helps to guide state agencies, such as California State Parks during issuance of permits and approval of projects. Courts have interpreted CEQA to afford the fullest protection of the environment within the reasonable scope of the statutes. CEQA applies to all discretionary projects proposed to be conducted or approved by a California public agency, including private projects requiring discretionary government approval. The purpose of CEQA is to disclose to the public any significant environmental effects of a proposed discretionary project, through the preparation of an Initial Study (IS), Negative Declaration (ND), or Environmental Impact Report (EIR), prevent or minimize damage to the environment through project alternatives, mitigation, and monitoring, disclosure of the decision making process, enhance public participation in the environmental review process through scoping meetings, public notice, public review, hearings, and the judicial process, and improve interagency coordination through early consultations.

The decision to prepare an EIR will be made either during preliminary review or at the conclusion of the IS. An EIR shall be prepared if there is substantial evidence that the project may have a significant effect on the environment. The determination of whether a project may have a significant effect on the environment calls for careful judgment, based to the extent possible on scientific and factual data. In cases where it is not clear whether there is substantial evidence that a project may have a significant effect on the environment, an EIR shall be prepared when there is serious public controversy concerning the environmental effect of a project. If certain conditions are met, the state agency shall find that a project may have a significant effect on the environment which will require a Mandatory Finding of Significance; such a finding shall require an EIR to be prepared.

A Negative Declaration shall be prepared for a project which California State Parks determines from an Initial Study will not have a significant effect. Or, a Mitigated Negative Declaration shall be prepared if the Initial Study identified potentially significant effects, but revisions in the project or mitigation measures to avoid or reduce the effects to a point where no significant effects would occur are agreed to by California State Parks before the negative declaration and initial study are released for public review.

Development Concept Plans
A DCP is used for large development proposals in National Parks, such as a visitor center, or where planning for the future of these core areas encompass a large area. A DCP explores alternatives and lays out a conceptual framework for park managers to follow in the future. DCPs frequently include an EA under NEPA so that impacts of the alternative concepts can be evaluated. DCPs are made available for public review and comment.

Management Plans
Management Plans provide guidance for core area authorities in the Mojave and Colorado Deserts BR. Management Plans often include an EA under NEPA or IS under CEQA so that the impacts of alternative management strategies can be evaluated. For some management plans, an EIS under NEPA or EIR under CEQA is required due to the potential for significant impacts, or where the topic may be controversial. Management Plans are made available for pubic review and comment.

Each core area authority has developed a variety of management plans that include vision statements, goals, and objectives to achieve resource management and education that contributes to the Mojave and Colorado Deserts BR achievements. Several examples include:

A. Cultural Preserve Management Plan for Anza-Borrego Desert State Park (2012)
B. Death Valley General Management Plan (2002)
C. Death Valley Wilderness and Backcountry Stewardship Plan (2014)
D. The Santa Rosa and Jacinto National Monument General Management Plan (2004)
E. Santa Rosa and San Jacinto Scenic Byway Corridor Plan (2012)
F. Anza-Borrego Desert State Park Final General Plan and EIR (2005)
G. Anza-Borrego Desert State park Interpretation Master Plan (2015)
H. Colorado Desert District and Anza-Borrego Desert State Park Paleontology Program Development Plan (2010)
I. Joshua Tree National Park General Management Plan (1995)
J. Joshua Tree National Park Foundation Document (2015)

The core area authorities are currently discussing a plan to incorporate aspects of these plans into a broader regional Mojave and Colorado Deserts BR-specific plan.

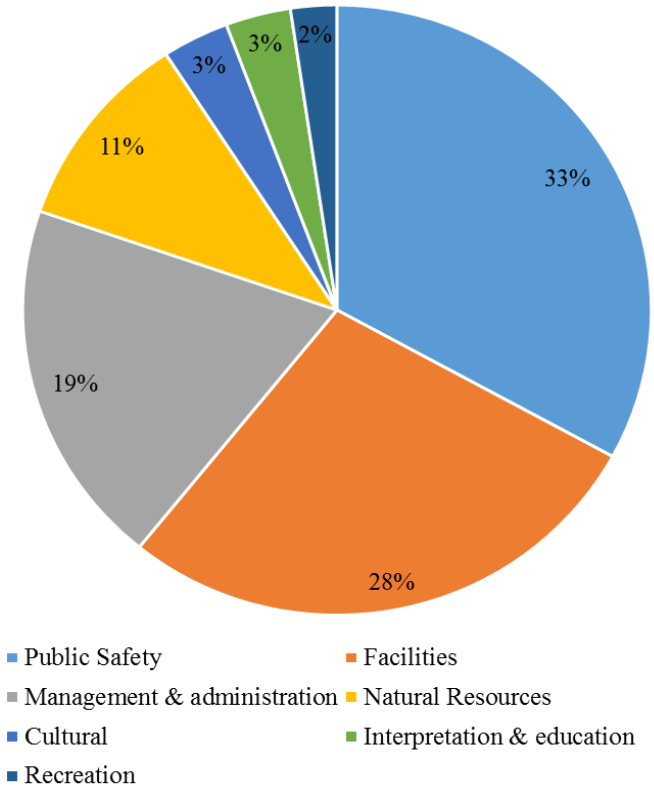
Learn more at:
http://www.parks.ca.gov/?page_id=980
https://www.nps.gov/deva/getinvolved/planning.htm
https://www.nps.gov/JOTR/getinvolved/planning.htm
http://www.blm.gov/ca/st/en/prog/nlcs/SantaRosa_SanJacintoMtns_NM.html

2.3.2 Budget and staff support, including approximate average annual amounts (or range from year-to-year); main sources of funds (including financial partnerships established (private/public), innovative financial schemes); special capital funds (if applicable); number of full and/or part-time staff; in-kind contribution of staff; volunteer contributions of time or other support.

The budgets of each core area can vary, but is generally static in recent years. The sources of funding come in three major categories: base funds provided by Congress to National Parks and California State Legislature to State Parks, revenue from gate fees in the National Parks, California state propositions, and other diverse sources including local friends groups and foundations. These funds translate to hundreds of permenant and seasonal employees in the core areas. Each core area has its own budget; the following tables reflect the approximated annual average budget expenditures by activity in each core area. In recent years the total operating budgets combined for the Mojave and Colorado Deserts BR is $20 million dollars. The core units employ approximately 250 personnel.

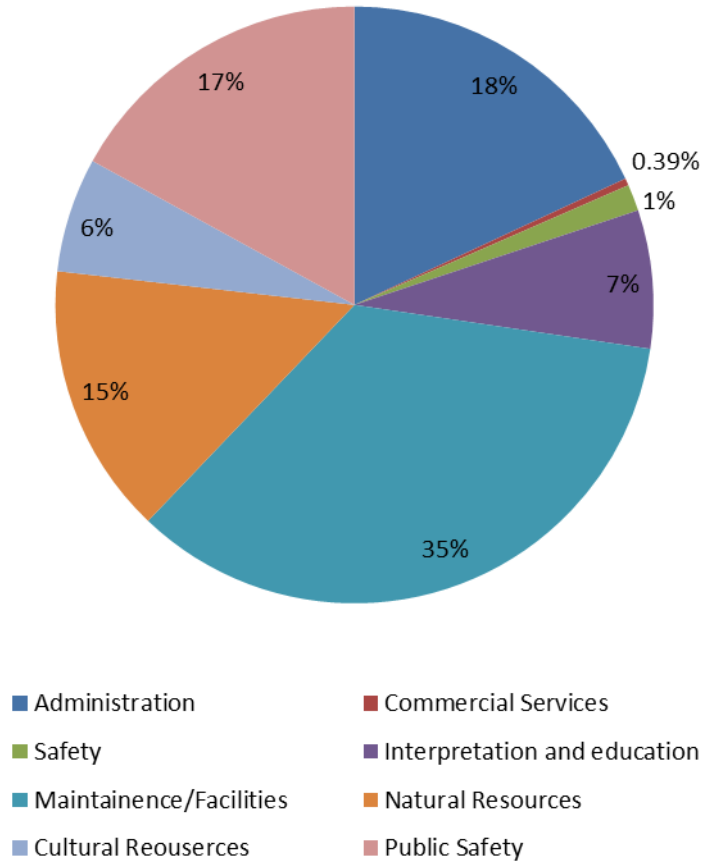
Anza-Borrego Desert State Park Core Area Average Annual Budget Expenditures

The average annual expendures by Anza-Borrego Desert State Park (approximately $5.2 million) are divided up amongst seven general programs (see graph below).



Death Valley National Park Average Annual Budget Expenditures for 2015

The annual budget varies from year to year. In 2015 Death Valley National Park had an $8.6 millioon dollar budget. The budget was applied to the following programs (see graph below).



Joshua Tree National Park Average Annual Budget Expenditures for 2015

Joshua Tree National Parks 2015 annual operating budget was $6.2 million dollars. The percentages on how the budget was applied was not available at the time of this report. Presumablly they follow a similar distribution.

Trained volunteer naturalists are important partners for various resource management activities in the core areas.

Volunteer naturalists conducting biological surveys in Anza-Borrego Desert State Park core area (Photo by Bob Perry)

2.3.3 Communications strategy for the biosphere reserve including different approaches and tools geared towards the community and/or towards soliciting outside support.

Anza-Borrego Desert State Park completed a General Plan in 2005 that includes a strategy and guidelines for community involvment and marketing. This plan enables the Anza-Borrego Desert State Park core area to engage the local community through volunteer groups and societies (Anza-Borrego Desert State Park Paleontology Society, Colorado Desert District Archaeology Society Site Stewardship Program, Anza-Borrego Desert State Park Botany Society, Anza-Borrego Desert Naturalist Society, and Anza-Borrego Desert State Park volunteers), an its official visitor center. The Anza-Borrego Desert State Park has developed an interpretive management plan and is developing a new vision for interpretation and education that involves reaching out to community members through on-line tools such as YouTube by creating short on-line video vignettes. Through the on-line video vignettes, local members of the community will be introduced to the Mojave and Colorado Deserts BR. In addition to on-line video vignettes, the vision for the interpretation and education of the Man in the Biosphere project will include park events that will introduce local community members to members of the local Native American cultures. Anza-Borrego Desert State Park® and Salton Sea State Recreation Area can achieve this vision through guest speakers at “campfire programs,” events in which people camping and local community members can attend.

2.3.4 Strategies for fostering networks of cooperation in the biosphere reserve that serve as connections ("bridging") among diverse groups in different sectors of the community (e.g. groups devoted to agricultural issues, local economic development, tourism, conservation of ecosystems, research and monitoring).

Each core area engages a variety of diverse groups in different sectors of the community to foster networks of cooperation that serve as connections to address economic development, tourism, conservation, research and monitoring.

The Death Valley and Joshua Tree National Parks participate in several landscape-scale collaborative groups such as the NPS Mojave Network Inventory and Monitoring program, The Desert Managers Group; the Southern Nevada Agency Partnership, Desert Tortoise Management Oversight Group, and Mojave Desert Ecosystem Program. Additionally, the NPS works with local communities, counties and states to identify common goals and solutions to emerging issues.

Anza-Borrego Desert State Park core area has developed and/or been involved with 5 separate venues oriented towards fostering cooperation and understanding among diverse groups (Anza-Borrego Desert State Park Paleontology Society, Colorado Desert District Archaeology Society Site Stewardship Program, Anza-Borrego Desert State Park Botany Society, Anza-Borrego Desert Naturalist Society, and Anza-Borrego Desert State Park volunteers). This core area also participates in several collaborative groups, such as the flat-tailed horned lizard Interagency Coordinating Committee and Management Oversight Group and Peninsular Bighorn Sheep Recovery Team.

2.3.5 Particular vision and approaches adopted for addressing the socio-cultural context and role of the biosphere reserve (e.g. promotion of local heritage resources, history, cultural and cross-cultural learning opportunities; cooperation with local population; reaching out to recent immigrant groups, indigenous people etc.).

Death Valley and Joshua Tree National Parks -- 2016 is the centennial anniversary for the National Park Service. Leading up this milestone the NPS leadership developed the NPS's Call to Action-The Next 100 Years of Stewardship (https://www.nps.gov/calltoaction/). The Call to action reaffirms the role the NPS plays in the conservation of the Nations natural and cultural history. Within the call to action "the National Park Service must recommit to exemplary stewardship and public enjoyment of these places. We must promote the contributions that national parks and our community assistance programs make to create jobs, strengthen local economies, and support ecosystem services."

Anza-Borrego Desert State Park -- The Anza-Borrego Desert State Park PORTS (Parks Online Resources for Teachers and Students) Program introduces school children to socio-cultural context and role of the biosphere reserve. This core area also has plans to develop the following programs focused on upper elementry and middle school levels :

A. Traveling Paleo Lab: Housed in a modified tractor-trailer and designed to resemble a scientific research laboratory, the desert paleo program could travel to school sites and offer students an opportunity to excavate fossil replicas, collect and analyze data, and draw conclusions about the region during the Pleistocene Epoch. Academic in focus, driven by the Next Generation Science Standards, enhanced by real and replicated fossils and scientific equipment, and delivered by Park staff or docents, this paleo lab could significantly enhance a school's science curriculum, if only for a day. Given the

key factors teacher identify as important in their decision to participate in PORTS10, namely relevance to academic content standards and the introduction of technology into the classroom, the paleo lab would likely be a valued, popular venue.

B. Traveling Trunks: Based on a variety of topics—desert botany, desert wildlife, geology, people of the desert, starry nights and Indian skies, expeditions across the desert—these trunks could contain hands-on materials, replicated artifacts and biofacts, books, and curricula with links to a new e-Park library. A classroom teacher could use a tablet or PC to download a Park app and display audio and visual content for classroom use and discussion. Traveling trunks can serve as an exceptional resource that teachers appreciate; however, they do require staff support for reservations, check-out, returns, and inventory control. Camp Borrego, a Day in the

C. Desert: Given the popularity of Camp Borrego, the Foundation and Park may wish to consider expanding the camp's capacity by offering a secondary "lite" version. Given the commitment of time and staff for the three-day program at the fifth-grade level, there could be a one-day plus early evening program offered at the third-grade level. This abbreviated program would provide students a chance to explore the desert for an entire day and would directly align with the Next Generation Science Standards (third grade: ecosystems, biological evolution, Earth's systems, and Earth and human activity).

Educational opportunity in a Mojave and Colorado Deserts BR core area (Photo courtesy Anza-Borrego Foundation)

2.3.6 Use of traditional and local knowledge in the management of the biosphere reserve.

Traditional and local knowledge has been collected in each core area via formal oral history interviews as well as interviews conducted as part of larger park media projects (i.e., filming of local Timbisha Tribal elders performing traditional basket weaving). The core areas are required through various laws and policies to engage local native groups in a number of activities. Formal consultation is initiated with these cultural groups following the guidelines established under the National Environmental Policy Act, Section 106 of the National Historic Preservation Act, California Environmental Quality Act, and California State Historical

Resources Commission. While these laws and commissions have mandated consultation guidelines, the core areas have recently expanded efforts to involve interested Native American communities beyond the scope of legal mandates. Each core area is renewing efforts to directly involve Native American communities in the public interpretation of resources and values through ongoing projects in natural resource management and public interpretation and education. This includes involving Native American communities in annual projects and decision-making process through expanded outreach to interested parties and involvement in the development and planning processes. Core area authorities work with Native American communities and interested members to ensure that cultural messages presented to the public are accurate, incorporate traditional knowledge, and respect traditional beliefs. We also work with Native American communities to ensure that projects pose no detriment to ancestral places, and offer opportunities for traditional elders and youth to engage in projects and directly connect with their cultural heritage and traditional homelands.

The geographic separation of core areas in the Mojave and Colorado Deserts BR also lends itself to a rich and variable sources of traditional and local knowledge that each core area gains access to and uses for management. The following paragraphs describe some of these uses in each core area:

Anza-Borrego Desert State Park -- engages local Native American people, who refer to themselves as the Cahuilla, Kumeyaay, and Kwaaymii (the eastern extension of the Kumeyaay) Indians (De Barros 2014), in various ways, including the environmental compliance process when evaluating potential impacts to archaeological sites. In 2010 Anza Borrego Desert State Park designates seven cultural preserves within the park's boundary. The creation of these cultural preserves will generate a unique opportunity to work with the local tribal people and historic groups associated with these areas. The Government Modernization, Efficiency, Accountability, and Transparency Act of 2005 further requires that State agencies, such as California State Parks to post information on their web sites about public meetings, proposed regulations, and how to comment or otherwise participate

Death Valley National Park -- Traditional and local knowledge has been collected via formal oral history interviews as well as interviews conducted as part of larger park media projects (i.e., filming of local Timbisha Tribal elders performing traditional basket weaving). The most recent documentation was a series of eight short videos of tribal members describing traditional uses as well as the struggle with the government in gaining back some of their original homeland. These films are available to the public as part of the new visitor center exhibits.

The Timbisha Shoshone Tribe has lived within Death Valley National Park "since time immemorial." The tribe's ancestral homeland includes the all of the park and areas outside the park under the control of the Bureau of Land Management. The tribe achieved federal recognition in 1983 but had no land base. The California Desert Protection Act of 1994 recommended a study to identify lands suitable to be set aside in trust for the tribe both within and outside Death Valley National Park. The Timbisha Shoshone Homeland Act (P.L. 106-423) of 2000 provided 7,753.99 acres of trust land for the tribe, comprising five separate parcels in California and Nevada, including land within Death Valley National Park.

The homeland legislation specified an area to be identified as the Timbisha Shoshone Natural and Cultural Preservation Area, located primarily within the central western part of Death Valley National Park. Much of this area is designated Wilderness. This area is of utmost significance to the tribe for historical, cultural, and religious reasons. The homeland legislation states that the tribe may engage in traditional practices in this area pursuant to a joint

management plan agreed to by the tribe and the NPS, which will be consistent with existing laws and regulations established for the management and stewardship of the park. The tribe is currently working with Death Valley National Park staff to write a cooperative management agreement relative to a variety of resource management issues, including: using fire to control vegetation and to encourage new growth; clearing and pruning of pinyon, mesquite, and willow; transplanting and cultivating native domesticated plants; regular cleaning and maintenance of water sources and springs for human and wildlife use; and cultivating plants to enable continuation of the tribe's basketry tradition. The Tribe and the NPS have signed memorandums of understanding for 1) the transfer of heritage and natural resource data, and 2) government-to-government relations and consultation.

Joshua Tree National Park -- has employed many seasonal employees and interns over the past ten years. These interns tend to be recent graduates from college and are looking for experience in their respective fields of study. Resource management and Interpretation & Resource Education have hired most of these internships into the fields of cultural resources, physical sciences, environmental education, vegetation, interpretation, Geographic Information Systems (GIS) and wildlife management. These interns gain valuable real world experiences in their fields of study as well as gaining the valuable ethics of environmental stewardship.

In the past couple of years, the park has worked with youth to create two proposed trails in the park. Students from both Morongo Unified School District and Riverside Unified School District have worked with park staff in trails and education to define a trail location and help determine interpretive signs on both the Skull Rock Trail and the Ocotillo Patch Trail. The park education office has also worked with high school students on a Student Summit on Climate Change to help students understand what is happening in the local area in relation to climate change. During this one day summit, students learn about the effect of climate change in the area, explore the park, and participate in a study on lichens that looks at the effects of air quality and climate on lichens.

Joshua Tree National Park routinely collaborates with 15 federally recognized Native American nations:

Agua Caliente Band of Cahuilla Indians
Augustine Band of Mission Indians
Cabazon Band of Cahuilla Mission Indians
Cahuilla Band of Mission Indians
Chemehuevi Indian Tribe
Colorado River Indian Tribe
Fort Mojave Indian Tribe
Los Coyotes Band of Mission Indians
Morongo Band of Mission Indians
Ramona Band of Cahuilla Indians
San Manuel Band of Serrano Mission Indians
Santa Rosa Band of Cahuilla Indians
Soboba Band of Luiseño Indians
Torres Martinez Desert Cahuilla Indians
Twentynine Palms Band of Mission Indians

To further reach and recruit students from tribal areas and in the lesser-served Spanish-speaking communities, the park is investigating an intake program for high school and college students into actual government service positions beyond that which is provided at an internship level.

2.3.7 Community cultural development initiatives. Programmes and actions to promote community language, and, both tangible and intangible cultural heritage. Are spiritual and cultural values and customary practices promoted and transmitted?

Nearly 40 recognized tribes exist across the Mojave and Colorado Deserts BR. approximately half of the tribes maintain connections to the landscape through the Core uints of within this Biological Reserve. While there are no programs directly related to developing native languages and cultures, our Core units go to great lengths to allow spiritual and cultural practices within the units when feasible. One such example is the Cooperative agreement between Death Valley National Park and The Timbisha Shoshone. Through this agreement and cooperative relationship the tribe is allowed to triditiionally harvest plants and plant materials within the park. This relationship was codified in 2000 with the passing of the Timbisha Homeland Act, nearly 16 years ahead of the Law 16 CFR 2.1(c), a rule allowing the National Park Service to enter into agreements with federally recognized tribes. This rule was enacted in August 2016.

Similarly, the governor of California signed into law AB 52 which went into effect July 2015. AB 52 requires State agencies to consider Tribal Cultural Values in CEQA when determining the impacts and mitigation of projects. Under AB 52 a Tribal Cultural Resource (TCR) is a site feature, place, cultural landscape, sacred place or object, which is of cultural value to a Tribe – AND is either: On or eligible for the CA Historic Register or a local historic register, – OR the lead agency, at its discretion, chooses to treat the resource as a TCR.

These practices and legal mechanisms have allowed the Core units of the Mojave and Colorado Deserts BR to engage in meaningful ways with our tribal communities.

2.3.8 Specify the number of spoken and written languages (including ethnic, minority and endangered languages) in the biosphere reserve. Has there been a change in the number of spoken and written languages? Has there been a revitalization programme for endangered languages?

The BR contains over 15 federally recognized Native American nations (see section 2.3.6), many of which, while speaking English, retain their own spoken and written languages. The Anza-Borrego Desert State Park core area alone lies within an area known to contain 4 languages.

- Spanish
- English
- Tipai dialect of the Yaman branch of Hokan (Native American)
- Shoshonean of Uto-Aztecan (Native American)

Learn more at: http://www.parks.ca.gov/?page_id=23545

2.3.9 Management effectiveness. Obstacles encountered in the management/coordination of the biosphere reserve or challenges to its effective functioning.

While there is a designated authority for each core area, the effectiveness of coordination/management could benefit from having a designated authority to oversee and lead the multitude of land use planning activities across buffer and transition areas. To this end, we are currently discussing with the United States Fish and Wildlife Service and Bureau of Land Management to participate in the MCDBR activities across these areas through incorperation

into the Desert Managers Group. The MCDBR has encountered coordination hurdles precipitated by large staffing turnover across all of the core areas. To combat the loss of institutional knowledge and in an effort to memorialize the unique relationship the Core area units play in the management of the MCDBR we are currently exploring and drafting a Memorandum of Understanding (MOU) and charter document. These materials will be a template for maintaining regular meetings, annual knowledge transfers, and should help resist the loss of knowledge that comes with high staffing turnover.

2.4 Comment on the following matters of special interest in regard to this biosphere reserve: (Refer to other sections below where appropriate).

2.4.1 Is the biosphere reserve addressed specifically in any local, regional or/and national development plan? If so, what plan(s)? Briefly describe such plans that have been completed or revised in the past 10 years.

Collectively, we are unaware of any development plans that specifically address the Mojave and Colorado Deserts BR.

2.4.2 Outcomes of management/cooperation plans of government agencies and other organizations in the biosphere reserve.

There are numerous demonstrated outcomes from management plans and cooperative agreements in the Mojave and Colorado Deserts BR, including the designation of critical habitat for sensitive species, habitat conservation planning areas set aside for multiple species, recreational access for off highway activities, land acquisitions to expand core areas, and renewable energy development in buffer and transition areas. Federal and state wilderness areas have been designated, and critical habitat has been designated for three federally sensitive species (desert tortoise, peninsular bighorn sheep, and desert pupfish) provide additional layers of conservation protection in a total of 1,673,971 hectares of buffer and 284,333 hectares of transition area (Table 3, Figure 4 and 5). Further protection is afforded to buffer and transition areas by a series of habitat conservation planning areas established or underway for multiple species in Imperial Valley, Coachella Valley, East San Diego County, and Mojave (Table 3, Figure 4).

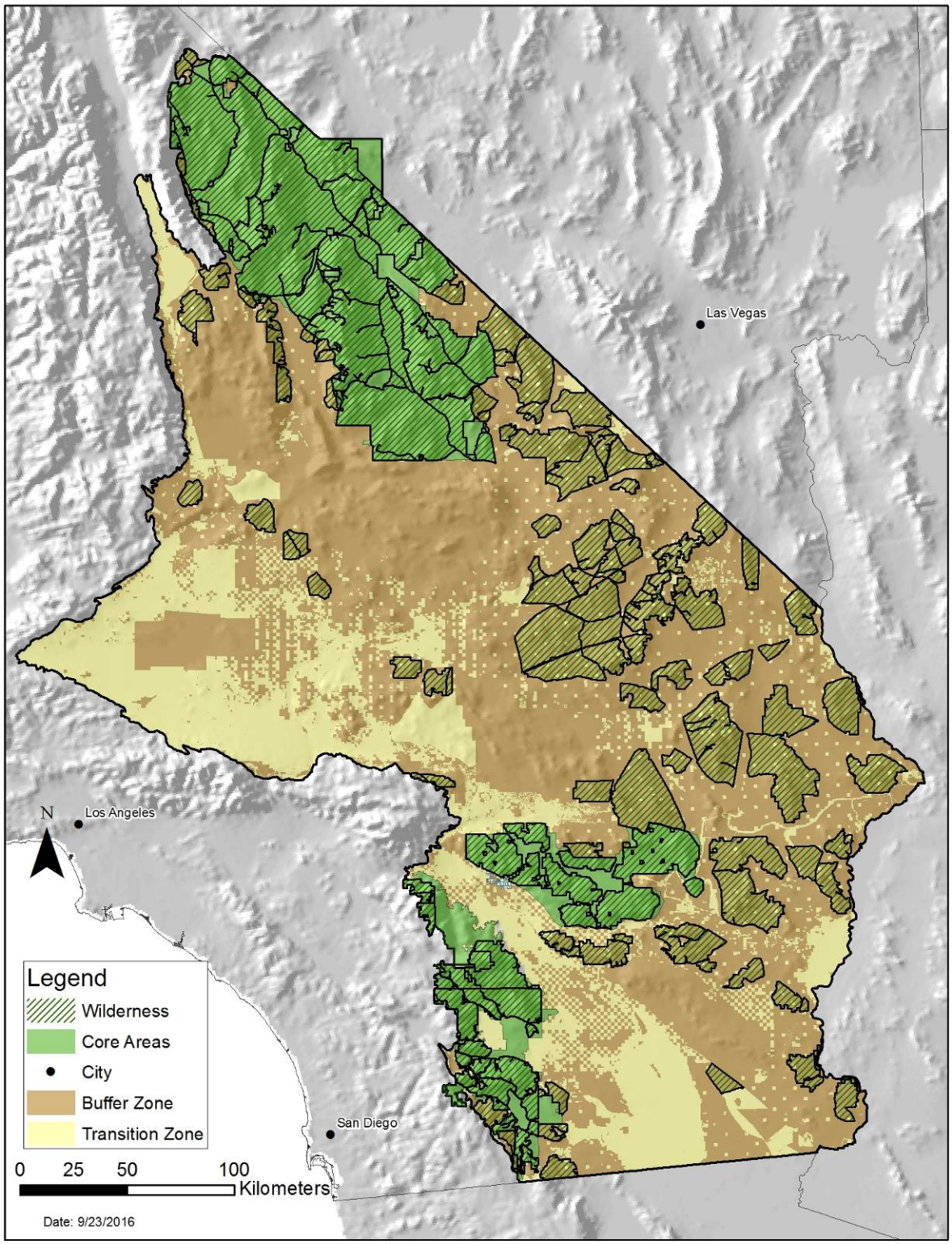


Figure 4. Designated federal or state wildneress areas present throughout the Mojave and Colorado Deserts Biosphere Reserve, United States, 2014.

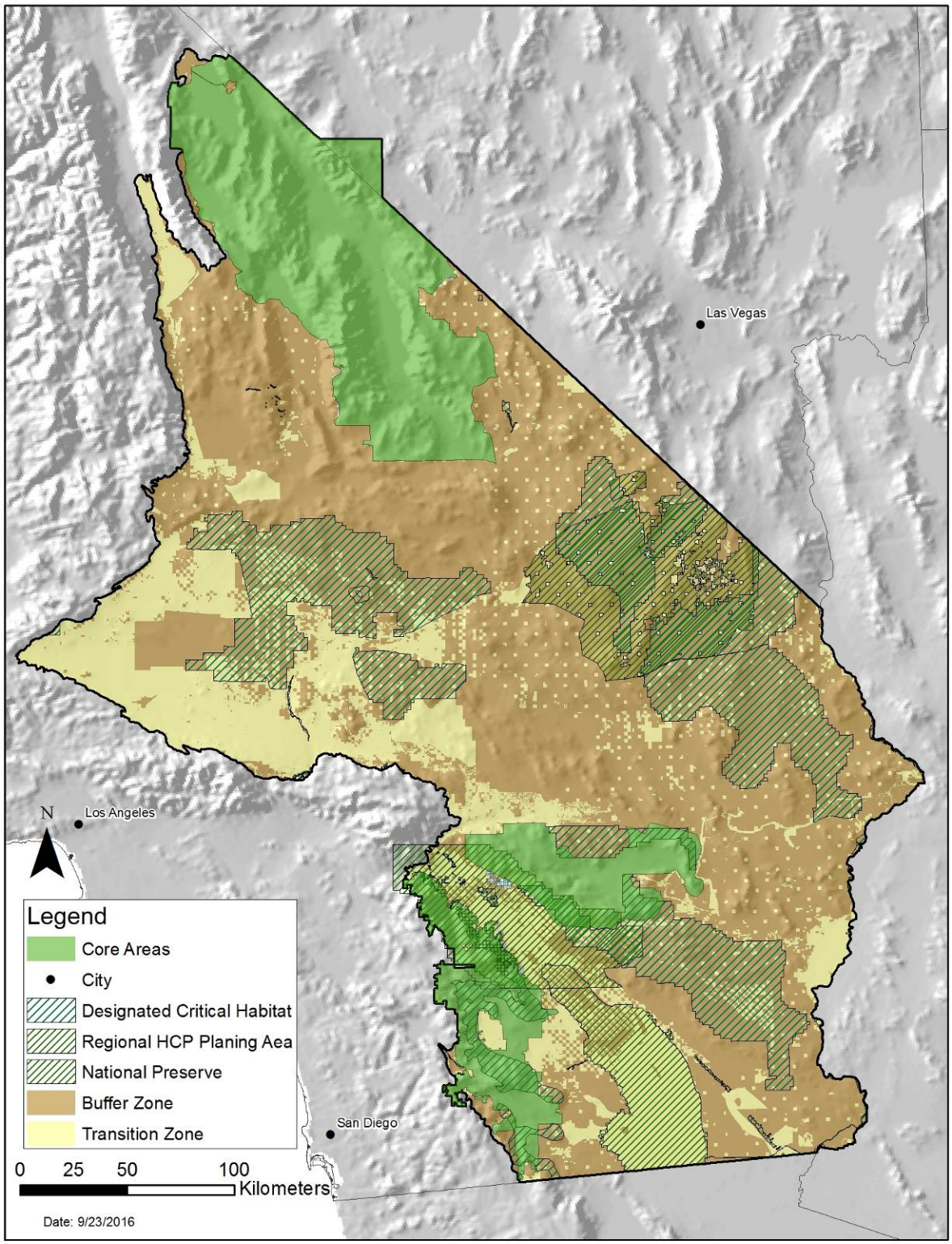


Figure 5. Protected areas present throughout the Mojave and Colorado Deserts Biosphere Reserve, United States, 2014.

In 2008, the Bureau of Land Managment, California Energy Commission, USFWS, and the Department began a collaborative effort to draft a Desert Renewable Energy Conservation Plan (DRECP) covering the Mojave and Colorado/Sonora desert region of California. To date, renewable energy development in California has been permitted on a project-by-project basis. To facilitate this, the BLM has produced Programmatic Environmental Impact Statements

(PEIS) for wind (BLM 2005), geothermal (BLM and USFS 2008), energy corridors (DOE and BLM 2008), and solar (BLM and DOE 2012). Through these and other efforts, renewable energy has expanded within the buffer and transition areas (wind energy: 117,185 ha of buffer, 6106 ha of transition; solar 20,027 ha of buffer, 90 ha of transition, and geothermal; Table 3, Figure 4)

Plans for recreatoinal vehicle use also provides access to 10,748 ha of buffer area and 246,261 ha of transition area throughout the Mojave and Colorado Deserts BR (Table 3, Figure 6). Additionally, the West Mojave Route Network Project (WMRNP) is a travel management planning effort covering 3,742,200 ha in the West Mojave area of the California desert. Approximately 1,255,500 ha in the planning area are public lands managed by the BLM, providing for public offroad vehicular access, livestock grazing, and long-term conservation goals (http://www.blm.gov/ca/st/en/fo/cdd/west_mojave__wemo.html).

An agreement between Anza-Borrego Desert State Park core area and the Anza Borrego Foundation has led to numeorus parcels of land to be acquired, resulting in the expansion of the Anza-Borrego Desert State Park core area by 15,574 acres (Figure 7).

Lastly, an agreement between the Anza-Borrego Desert State Park and University of California at Irvine has led to a collaborative research, scientific conferences, and public presentations regarding the natural environments that lie within the Anza-Borrego Desert State Park core area.

Table 3.

	Area of overlap (Hectares)	
Land use	Buffer	Transitional
Protected Area		
US Fish and Wildlife Service National Wildlife Refuges	649904	9304
U.S.National Parks/Monuments		
Lake Mead	524930	8707
Mojave Preserve	606094	37235
Critical Habitat	1673971	284333
Recreation		
Off Highway Vehicle	10748	246261
Renewable Energy		
Wind	117185	6106
Solar	20027	90
Geothermal	negligable	negligable

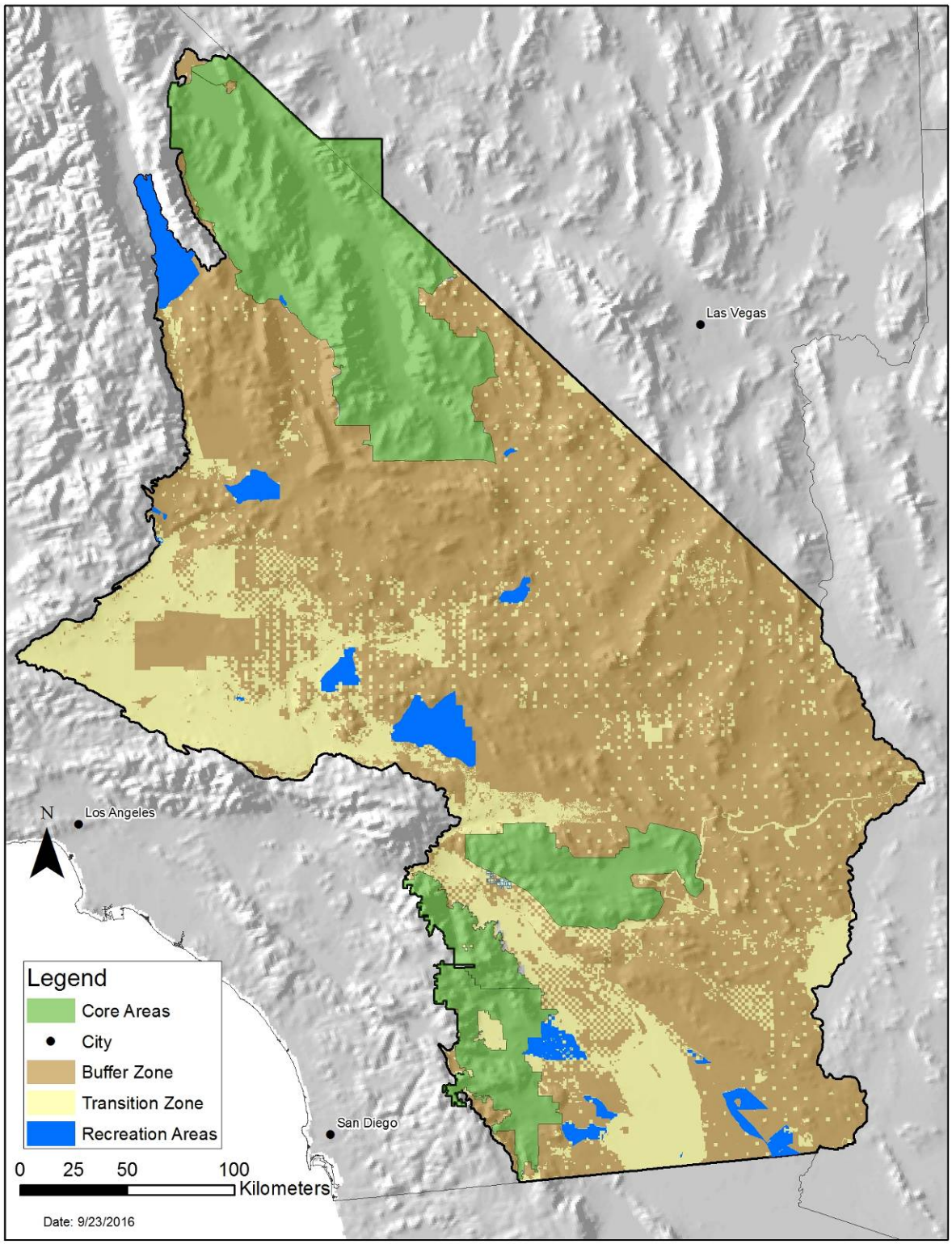


Figure 6. Designated regreation areas present in the Mojave and Colorado Deserts Biosphere Reserve, United States, 2014.

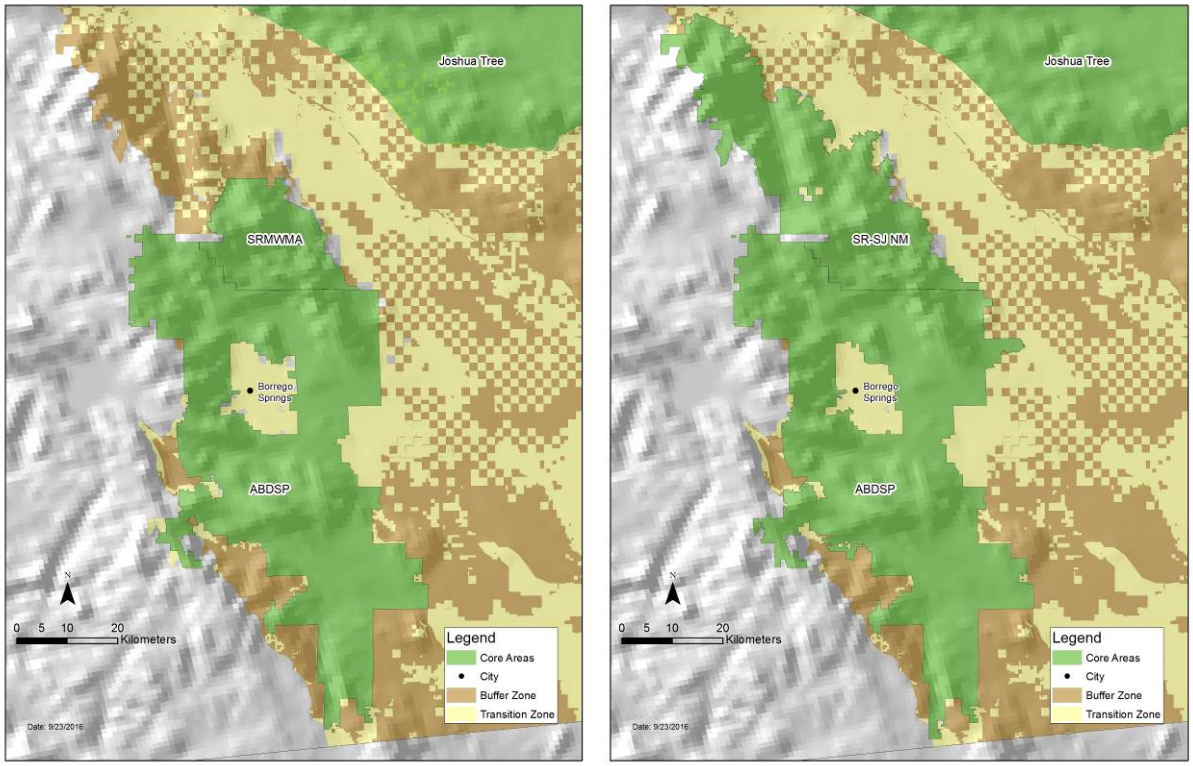


Figure 7. Changes in the geographic boundary of the Anza Borrego Desert State Park core area attributed to acquisitions of buffer and transition areas along its border by the Anza Borrego Foundation and the redesignation and enlargement of the Santa Rosa Mountains Wildlife Management Area to the Santa Rosa and San Jacinto National Monument, United States.

2.4.3 Continued involvement of local people in the work of the biosphere reserve. Which communities, groups, etc. How are they involved?

Each of the core units maintains special relationships with our local communities. We prioritize involvement/engagement with our local and indigenous people. Each of the Core units is actively working to strengthening partnerships with local communities and Chambers of Commerce to provide information and promote activities within the park and surrounding communities. One common approach between the Core units is to engange local communities in volunteer activities (e.g. invasive plant removals or community trash clean-ups). Additionally, each unit maintains lists of interested individuals, organizations and media outlets which are notified when agencies have proposed actions and seek comment and participation. This approach is consistent with numerous state and federal laws mandating public involvement, like CEQA and NEPA. These mechanisms allow the sharing of information and project alternatives, receiving feedback and comments from the public and creating a formal record of decisions. Specific examples highlighting how we engage our local communities are listed below.

Death Valley National Park and the Timbisha Shoshone Indian Tribe have entered into a Cooperative Agreement to facilitate interaction between the Tribe and the Park for mutually addressing shared goals, while cooperatively working toward fulfilling the Park's mission. The Parties have mutual goals of documenting, preserving, interpreting, and protecting natural and cultural resources across the Tribe's ancestral homeland, which includes areas that now comprise Death Valley National Park. The ongoing pursuit of these respective goals requires frequent cooperation, sharing of information and expertise of mutual benefit in the

management, preservation, history, use, and protection of these resources. Moreover, this cooperative agreement is the out growth of the 2000 Timbisha Homeland Act which congressionaly designated and transferred lands within Death Valley National Park to the Timbisha Shoshone.

Joshua Tree National Park collaborates with many partners, both formally and informally. Formal partnerships bring additional monetary resources into the park to implement specific projects or programs. The park works with other community groups or individuals to provide information on a regional level to visitors and residents. For example, the park worked with the Morongo Basin Conservation Association to pull the invasive, exotic Sahara Mustard plant in areas outside of the park boundary to help control the invasion of the plant to maintain a more resilient landscape. The park has also developed strong partnerships with local schools and universities. Partnerships with cooperators (Joshua Tree National Park Association) and friends groups also allow for activities in education, outreach and research.

Anza-Borrego Desert State Park completed a General Plan in 2005 that includes a strategy and guidelines for community involvement and marketing. This plan enables the Anza-Borrego Desert State Park core area core area to engage the local people as integral members of their communities, sharing responsibilities for local and regional issues that include youth development, economic health, and planning. It also established goals to encourage all user groups to visit the core area, promote a variety of public outreach programs and marketing strategies that inform potential users of the core area. Anza-Borrego Desert State Park has developed and/or been involved with 5 separate venues oriented towards fostering cooperative involvement in the Anza-Borrego Desert State Park core area core area surrounding region, including the Anza-Borrego Desert State Park Paleontology Society, Colorado Desert District Archaeology Society Site Stewardship Program, Anza-Borrego Desert State Park core area Botany Society, Anza-Borrego Desert Naturalist Society, and Anza-Borrego Desert State Park core area local community volunteer groups. Anza-Borrego Desert State Park core area provides training and certification programs for members of these groups, who can then be involved with biological surveys, information gathering and associated digital storage, museum curation of paleontological, archaeological, and botanical specimens. Anza-Borrego Desert State Park also engages local Native American people, who refer to themselves as the Cahuilla, Kumeyaay, and Kwaaymii (the eastern extension of the Kumeyaay) Indians (De Barros 2014) in various ways, including having a designated member of that community participate in the environmental compliance process by providing comments on and evaluating potential archeological impacts of various field activities during onsite visits. Local people also are involved in work within the biosphere reserve through various citizen science activities overseen by Anza-Borrego Desert State Park core area, including annual surveys for the iconic Peninsular bighorn sheep and neotropical migratory least Bell’s vireo, as in addition to the Borrego Valley Hawkwatch event and National Butterfly Association’s Anza-Borrego Butterfly count.

Additional groups directly and indirectly contacted, invited, and/or informed to engage in significant management issues/decisions include:

- Archeological Conservancy
- Back Country Horsemen, Redshank Riders Unit
- Back Country Horsemen of California, San Diego Unit
- Bighorn Institute
- Borrego Jeep Photo Tours
- Borrego Springs Chamber of Commerce

- Borrego Springs Civic Foundation
- Borrego Springs Fire Department
- Borrego Springs Unified School District
- Borrego Valley Endowment Fund
- Borrego Water District
- Buena Vista Audubon
- Cahuilla Band of Mission Indians
- California Conservation Corps
- California Department of Conservation, Division of Mines & Geology
- California Department of Corrections
- California Department of Fish and Wildlife
- California Department of Forestry and Fire Protection (CalFire)
- California Department of Parks & Recreation, Ocotillo Wells State Vehicular Recreation Area
- California Department of Transportation (CalTrans)
- California Department of Water Resources
- California Environmental Protection Agency
- California Invasive Plant Council
- California Native Plant Society – Bristlecone Chapter
- California Native Plant Society – Mojave Desert Chapter
- California Native Plant Society – Orange County Chapter
- California Native Plant Society – Riverside-San Bernardino Chapter
- California Native Plant Society – San Diego Chapter
- California Overland Tours
- California Society for Ecological Restoration
- California State Assembly, District 56 (Assemblyman Eduardo Garcia)
- California State Assembly, District 71 (Assemblyman Brian Jones)
- California State Historical Resources Commission
- California State Parks Foundation
- California State Senate, District 28 (Senator Jeff Stone)
- California State Senate, District 38 (Senator Joel Anderson)
- California State Senate, District 40 (Senator Ben Hueso)
- Center for Biological Diversity
- Coachella Valley Mountains Conservancy
- Conservation Biology Institute
- Death Valley Concervancy
- Death Valley Natural History Association
- Desert Bighorn Council
- Desert Committee
- Desert Fishes Council
- Desert Protective Council
- Destination Borrego
- Friends of the Desert Mountains
- Great Old Broads for Wilderness
- Iipay Nation of Santa Ysabel
- Imperial County Air Pollution Control District
- Imperial County Board of Supervisors, District 2 (Supervisor Jesus Terrazas)
- Imperial County Board of Supervisors, District 3 (Supervisor Michael Kelley)
- Imperial County Board of Supervisors, District 4 (Supervisor Ryan Kelley)
- Imperial County Department of Planning and Development Services
- Imperial County Sheriff/Coroner's Office

- Imperial Irrigation District
- International Dark-Sky Association
- Inyo County Borad of Supervisors
- Joshua Tree National Park Association
- Kumeyaay Diegueno Land Conservancy
- League of Conservation Voters
- Los Coyotes Band of Mission Indians
- Morongo Baisin Conservation Association
- National Association of Interpreters
- Native American Lands Conservancy
- Natural Resources Defense Council
- Nye County Board of Supervisors
- Ocotillo Wells Volunteer Fire Department
- Organization of Biological Field Stations
- Pacific Crest Trail Association
- Ranchita Volunteer Fire Department
- Resources Legacy Foundation
- Riverside Astronomical Society
- Riverside County Board of Supervisors, District 3 (Supervisor Chuck Washington)
- Riverside County Board of Supervisors, District 4 (Supervisor John Benoit)
- Safari Club International – San Diego Chapter
- San Bernardio County Board of Supervisors
- San Diego Association of Geologists
- San Diego Association of Governments
- San Diego Audubon
- San Diego County Air Pollution Control District
- San Diego County Archeological Society
- San Diego County Board of Supervisors, County Supervisor, District 2 (Supervisor Diane Jacob)
- San Diego County Board of Supervisors, County Supervisor, District 5 (Supervisor Bill Horn)
- San Diego County Department of Agriculture, Weights and Measures
- San Diego County Department of Assessor/Recorder/County Clerk
- San Diego County Department of the Medical Examiner
- San Diego County Department of Parks and Recreation
- San Diego County Department of Planning and Land Use
- San Diego County Department of Public Works
- San Diego County District Attorney
- San Diego County Public Library
- San Diego County Sheriff's Department
- San Diego Gas & Electric
- San Diego Hang Gliding and Paragliding Association
- San Diego Natural History Museum
- San Diego Zoological Society
- Shelter Valley Volunteer Fire Department
- Sierra Club
- Society for Conservation Biology – Orange County Chapter
- Society for Conservation GIS
- Southern California Botanists
- Sunbelt Publications
- The Anza Trail Foundation

- The Nature Conservancy
- The Trust for Public Lands
- The Wilderness Society
- The Wildlife Society
- Tierra Del Sol Four Wheel Drive Club of San Diego
- Torres Martinez Desert Cahuilla Indians
- Tubb Canyon Desert Conservancy
- United States Department of Agriculture, Forest Service, Cleveland National Forest
- United States Department of Commerce, National Oceanic and Atmospheric Administration,
- National Weather Service
- United States Department of Defense
- United States Department of Homeland Security
- United States Department of the Interior, Bureau of Land Management, California Desert District
- United States Department of the Interior, Bureau of Land Management, Palm Springs Field Office
- United States Department of the Interior, Bureau of Land Management, El Centro Field Office
- United States Department of the Interior, Bureau of Land Management, South Coast Field Office
- United States Department of the Interior, Fish and Wildlife Service
- United States Department of the Interior, U.S. Geological Survey
- United States House of Representatives, District 36 (Congressman Raul Ruiz, M.D.)
- United States House of Representatives, District 50 (Congressman Duncan D. Hunter)
- United States House of Representatives, District 51 (Congressman Juan Vargas)
- United States Senate, Senator Barbara Boxer
- United States Senate, Senator Dianne Feinstein
- University of California, Davis, Wildlife Health Center
- University of California, Division of Agriculture and Natural Resources, Cooperative Extension
- University of California, Riverside, Center for Conservation Biology
- University of California, San Diego, Scripps Institution of Oceanography, Geosciences Research Division
- University of California, San Diego, Scripps Institution of Oceanography, Institute of Geophysics and Planetary Physics
- University of California, Santa Barbara, Earth Research Institute
- University of Nevada, Desert Research Institute, Western Regional Climate Center

2.4.4 Women's roles. Do women participate in community organizations and decision-making processes? Are their interests and needs given equal consideration within the biosphere reserve? What incentives or programmes are in place to encourage their representation and participation? (e.g. was a "gender impact assessment" carried out?) Are there any studies that examine a) whether men and women have different access to and control over sources of income and b) which sources of income do women control? If so, provide reference of these studies and/or a paper copy in an annex.

Since the late 1960s, the U.S. government and legal system significantly revamped labor laws to improve women's roles in the workplace (http://www.nwhp.org/resources/womens-rights-movement/detailed-timeline/). Today, women participate in the decision-making in federal, state, and local bureaus, privately owned business, and community organizations. Although

there remains examples of unequal women's rights (https://www.hrw.org/world-report/2015/country-chapters/united-states), women in many parts of the U.S. hold senior leadership and executive positions in private companies, legislative offices, and state, federal, local government offices, and federal military and civilian offices.

Overall, the interests of men and women are given equal consideration within the biosphere reserve. Women participate in community organizations and decisions, including supervisory and superintendent positions in California State Parks within the Anza-Borrego Desert State Park core area, director of the University of California Natural Reserve System, of which several lie within the Mojave and Colorado Deserts BR, and leadership roles with the Anza-Borrego Foundation, University of California Irvine Research Center, and various local societies. The Mojave and Colorado Deserts BR complies with all federal and state laws governing women's rights to ensure the representation of women in the workplace, decision-making processes, and community organizations.

2.4.5 Are there any changes in the main protection regime of the core area(s) and of the buffer zone(s)?

Several changes in the main protection regime of the core areas, transition, and buffer areas have taken place, as described below and further detailed in section 4.

1. The status of Death Valley and Joshua Tree National Monuments were elevated to National Parks under the California Desert Protection Act of 1994; this also increased the size of Death Valley National Park by 1.4 million acres and Joshua Tree National Park by 234,000 acres. This same bill added 7 million acres of wilderness in and out of the core areas, leading to greater resource protection in previously designated Biosphere Reserve buffer and transition areas.
2. The status of the Santa Rosa Mountains Wildlife Management Area was changed in 2000 to the Santa Rosa and San Jacinto National Monument, effectively increasing the size of this portion of the original Anza-Borrego Desert State Park core area by 280,000 acreas, and adding lands administered by the Bureau of Land Management and US Forest Service.
3. The size of the Anza-Borrego Desert State Park core area was enlarged by 15,574 acres through a series of land acquisitions, and the majority of this core area has been designated state wilderness, providing additional protection for natural resources.
4. Changes in buffer and transition areas include the designation of critical habitats for federally threatened and endangered species, designation of wilderness areas, and establishment of multiple and single species habitat conservation planning areas, including the Coachella Valley Multiple Species Habitat Consevation Plan area. For example, an area extending outword from the southern border of the Joshua Tree National Park core area (Indio Hills Palms) was acquired and redesigated buffer to core area providing land and resource protections afforded under Anza-Borrego Desert State Park core area, as administered under California State Parks (https://coachellavalleypreserve.org/page3.php).
5. Lastly, 43,242 acres of Anza-Borrego Desert State Park were designated as cultural preserves, which afford additional protection and recognition to these areas.

2.4.6 What research and monitoring activities have been undertaken in the biosphere reserve by local universities, government agencies, stakeholders and/or linked with national and international programs?

Research and monitoring is taking place throughout the BR. Please see Appendix A for list of 100s of publications describing the many research and monitoring activities.
In addition to information provided in the logistics sections here, we provide the following examples.

California State Parks employs environmenetal scientists that implement biotic and abiotic inventory, monitoring, restoration, conservation, management, and ecosystem recovery activititis in the Anza-Borrego Desert State Park core area. These individuals collaborate with researchers to incorporate sound scientific concepts, principles, and theories into studies intended to understand baseline patterns and advanced biological processes, such as species interactions, wildlife habitat relationships, and wildlife space use and demographic responses to human disturbance to inform traditional and adative management plans to best manage and/or restore wildlife populations and ecological function. There are numerous recognized accomplishments by this group, one of which is represented by an agreement between the Anza-Borrego Desert State Park and University of California, Irvine Research Center. This collaboration is the catalyst for new research and monitoring, enabling both parties to embrace the integration of sound science into management. In cooperation with Anza-Borrego Foundation, Denver Zoo Foundation, Mongolian Academy of Sciences, and United Natoins Development Program Special Protected Area Network, this group is also engaged in international conservation and research through developing a "Sister Park" relationship with Ikh Nartiin Chuluu Nature Reserve in Mongolia (https://www.parks.ca.gov/pages/712/files/Ano_Mongolia_Sisterpark_ResolutionMay2008.pdf). This partnership includes a conservation agreement that emphasizes:

Through a variety of methods, the National Park Service encourages scientific research and education focused on environmental education. The National Park Service coordinates the Research Permit and Reporting System for all parks with academic research activities.

http://science.nature.nps.gov/research

Death Valley National Park coordinates its academic research activities through this program. Information from this program is linked directly to professional academic institutions, is part of academic publications and conferences, and feeds the information flow within the park to the visiting public.

Death Valley encourages valid scientific research; for terrestrial vertebrates many research projects include sampling within the boundary of the park and are part of a larger effort that extends beyond park boundaries. Research is reviewed and tracked through a research permit system. Researchers are park staff, students, university staff, and staff from other agencies.

The Robert Lee Graduate Student Research Program is designed to provide Joshua Tree National Park and the general public with a better understanding of the park's natural and cultural resources. Funded by the Lee Family Foundation with contributions by the Joshua Tree National Park Association, the program provides student researchers with the opportunity to demonstrate how their research can apply to land management issues. Projects funded through the park's Lee Science Grant Program have led to a number of papers that have been accepted and published in peer-reviewed journals. Since the program began in 2002, research projects have included a wide range of topics related to the vegetation, wildlife, ecology, paleontology, and cultural resources of Joshua Tree. http://www.nps.gov/jotr/naturescience/grantprogram.htm

Joshua Tree National Park received funding in 2012 to investigate the effects that climate change may have on its flora and fauna. A partnership was made with the University of California – Riverside to create a robust monitoring strategy to document the effects of climate change on the desert ecosystem. This project is on-going with annual survey of permanent plots to monitor changes to reptiles, birds, mammals and plants species from climate effects. Two peer-reviewed journal articles have been published outlining this effort.
The core areas are committed to working with school groups and local communities to engage and communicate research efforts at the grassroots level. Spreading the word will further be a future task as this program moves from face-to-face education about climate towards distance learning technology that allows students around the world to learn about the core areas (e.g., http://www.nps.gov/jotr/forteachers/index.htm. The following is a short list of Citizen Science activities in which local communities engage:

Anza-Borrego Desert State Park Citizen Science

- Annual monitoring of Peninsular Bighorn Sheep (population count)
- Annual surveys of Least Bell's Vireo
- Annual Audubon Christmas Bird Count
- Borrego Valley Hawkwatch (established 2003)
- National Butterfly Association (NBA) Anza-Borrego butterfly count
- Numerous studies on the systematics, ecology, genetics, and divesity of plants, reptiles, amphibians, mammals, birds, fish, and insects have been completed by natural history museums, university professors, and graduate students from numerous universities, including U.C. Davis, U.C. Irvine, U.C. Riverside, Princeton University, University of Arizona, U.C. Berkeley, and other universities from around the world.
- Numerous archaeological and paleontological studies have also been completed.

Joshua Tree Citizen Science

- California Phenology Project
- Saving Joshua Tree's Desert Species and EarthWatch Expedition
- Annual Christmas Bird Count
- Annual Butterfly Count

2.4.7 How have collective capacities for the overall governance of the biosphere reserve (e.g. organization of new networks of cooperation, partnerships) been strengthened?

Communication and governance across Core, Buffer, and Transition areas has generally been through collaborative, landscape scale groups that were formed to discuss emerging issues and threats to managed lands within the MDCMBR. Examples of these groups include The Mojave Desert Managers Group (http://dmg.gov/) and the Mojave Desert Ecosystem Program (https://www.mojavedata.gov/).

Additionally, each of core area has the capacity to educate local, national, and international communities on biodiversity conservation that arise from collaborative efforts such as between ABDSP and University of California, Irvine Research Center and ABDSP and the Anza Borrego Foundation. ABDSP/Anza Borrego Foundation work together to acquire transition and buffer habitat for inclusion into the ABDSP core area.

The Resource Conservation and Development Program was established by the federal government in 1962, in part, to make resources available to communities for conservation. To achieve this end, it established Resource Conservation and Development (RC&D) Areas which are each administered by a Council. The Natural Resource Conservation Service, NRCS,

provides each Council with funding for a Coordinator. The CVMSHCP area, including Dos Palmas RMU, is part of the Southern Low Desert RC&D. One project of the RC&D Council has been the formation of a Low Desert Weed Management Area group focused on the inventory and control of invasive plant species, including those at Dos Palmas RMU. To date, the group has completed a Rapid Watershed Inventory of invasive plants, developed weed treatment and inventory forms, and it has applied for grant funding; both to control invasive plants and to obtain software and GPS units for use by its members in documenting invasive plants and their treatment.

Other collaborative efforts implemented by the individual units include:

- Interagency Cooperative Agreement between ABDSP and BLM to enhance the conservation, management, and stewardship of paleontological resources on state park and public BLM lands across San Diego, Riverside, and Imperial Counties in California.
- MOU between California Department of Parks and Recreation and the County of San Diego Department of Planning and Land Use to collaboratively develop the East County Multiple Species Conservation Program Plan. The primary goal is to assemble a viable habitat preserve system which will allow the County to obtain coverage under the federal ESA for approximately 153 species of plants and animals that are rare or endangered while streamlining the environmental permit process for human development proposals that may impact such species in the 1.6 million acre eastern portion of the unincorporated County.
- MOU between BLM, USFS, CDFG, CDPR, and USFWS to implement a strategy plan for the recovery of Peninsular bighorn sheep.
- MOU between TNC, CDFG, CDPR, BLM, USFWS to develop and administer the Coachella Valley Preserve System in Riverside County.
- MOU between ABDSP, Cleveland Natl Forest, and San Diego County to establish a framework for the coordinated planning, alignment, design, and development of trails in San Diego County.
- Southern Low Desert Resource Conservation and Development Council
- Death Valley staff implemented a Long Term Ecosystem Monitoring Plan for Devils Hole in 2011. The LTEMP is implemented through an MOU with The US Fish and Wildlife service and the Nevada Division of Wildlife. This aquatic ecosystem is the only habitat for the critically endangered Devils Hole pupfish.
- Death Valley has initiated specific research projects in collaboration with academic institutions that examined ecosystem function, community structure, and population dynamics of Devils Hole and the Devils Hole pupfish.

2.4.8. Please provide some additional information about the interaction between the three zones.

Interactions between the three zones happen at a variety of scales (Figure 8). The Mojave and Colorado Deserts BR engage in collaborate efforts with entities in the buffer and transition zones at the Ecoregional, regional, and local level.

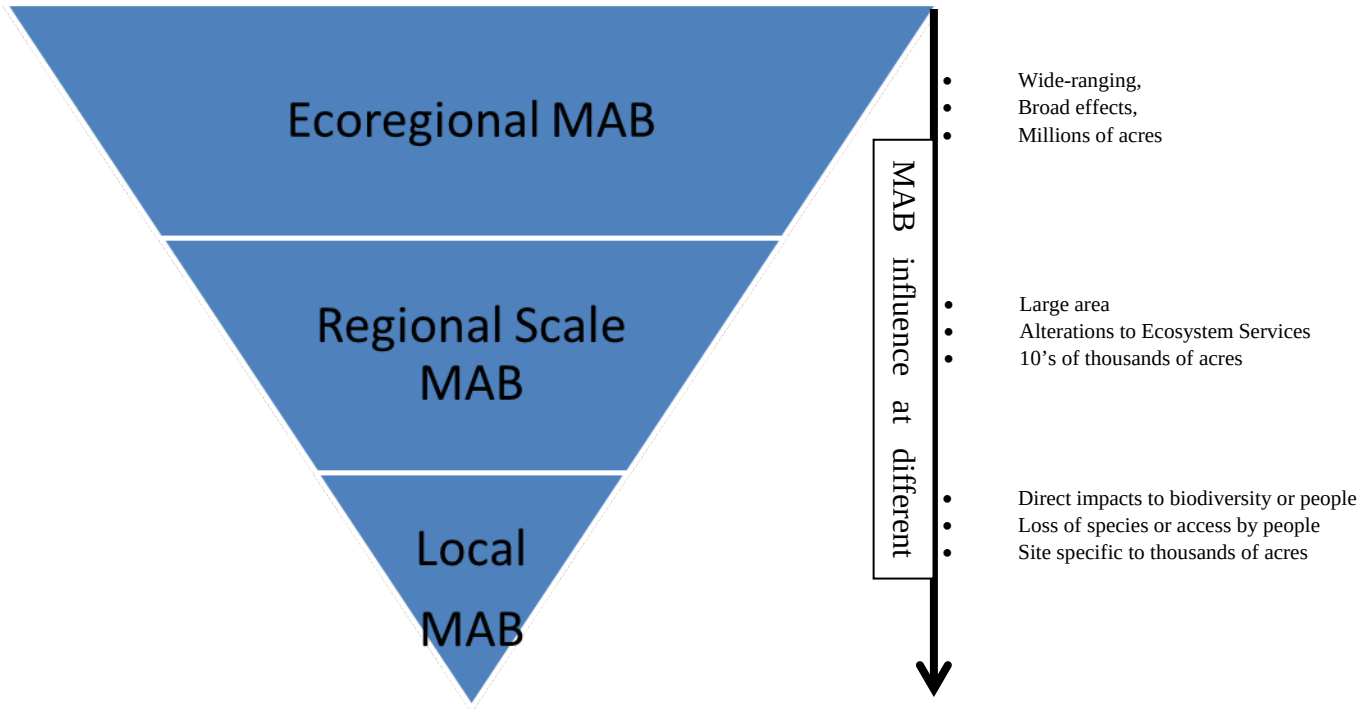


Figure 8 Conceptual model of the Mojave and Colorado Deserts MAB partnership hierarchy

The Desert Mangers Group, reffered to as DMG, (http://www.dmg.gov/) was established in 2000 and spans the same gergraphic area as the Mojave and Colorado Desert BR. The DMG was formed to facilitate dialogue and cooperation around the conflicting demands for use of the California deserts. Within the geographic area of the DMG and the Mojave and Colorodo Deserts BR there are two national parks, one national preserve, six military bases, 72 wilderness areas, and the California Desert Conservation Area Managed by the Bureau of Land Management (BLM). Additionally, this area includes 8 county jurisdictions and 37 federally recognized Native American Tribes. The Charter for the Desert Managers Group is added to this report in *Annex IV: Supporting Documents* as reference. While this group was not established as the coordinating body for the Mojave and Colorado Deserts BR we are deeply engaged with this group and the goals of the DMG and MAB program share considerable overlap. The DMG's next meeting is after the submission of this report, but we have asked to present the Man and Bioshpere Reserve concept at the next meeting. Our goal is to administer the BR through the DMG at the ecoregional level.

Two examples of the reserves interactions at the regional level are the Amargosa Basin Coordination group and the Coachella Valley Multiple Species Habitat Conservation Plan (MSHCP). The Amargosa river basin is part of a large regional carbonate aquifer extending from centeral Nevada and terminating in Death Valley National Park. This group was established to improve coordination and communication between agencies on efforts to concerve and manage water resources and water-dependent resources within the area of concern. Water in this arid environment is critical for sustaining communities and the

conservation of natural resources. See section 4.2.2 for additional information on the Coachella Valley MSHCP.

At the local level, the communities adjacent to Joshua Tree National Park formed the Morongo Basin Open Space Group to preserve community values (i.e Joshua Tree National Park) and allow for development. The Morongo Basin Open Space Group completed the Morongo Basin Conservation Priority Report in 2012 (https://sonoraninstitute.org/files/pdf/morongo-basin-conservation-priorities-report-a-strategy-for-preserving-conservation-values-07112012.pdf).

This report exemplifies how collaboration between a large number of federal, state, local government and non- profit partners can seek consensus in conservation and development in rural communities. Conservation priority setting helps to define specific areas of focus for the community's efforts at preservation. It is a process that recognizes the limitations of resources, the complexity of the available data and the diversity of needs and concerns that must be taken in to account. It is a collaborative process that aims to recognize, honor and preserve the place that are most representative of shared values. The process enabled local communities and land managers to gain information and provide opportunities for dialogue to support forward-looking decisions that balance basin wide conservation and growth. There were several outreach exercises hosted to identify cherished community treasures, worked to integrate connectivity for people and wildlife into local plans and projects and built the capacity of all stakeholders to understand and address the issues surrounding land use and conservation planning.

2.4.9 Participation of young people. How were young people involved in the organizations and community decision-making processes? How were their interests and needs considered within the biosphere reserve? What are the incentives or programs in place to encourage their participation?

Each core area has gone to great lengths to consider youth and create avenues for their engagement. Individually and collectively, we prioritize engaging the next generation of land and resource stewards. Together, the core area authorities ensure that the Mojave and Colorado Deserts BR engages thousands of young people annually.

Joshua Tree National Park -- has an active resource education program that offers opportunities tiered to different audiences. Students in the local area from preschool to twelfth grade are offered in-park and classroom programs including human and natural history. This program reaches about 18,000 students per year. It will be expanded through distance learning to break down physical boundaries and provide educational opportunities about this biosphere reserve area for students worldwide. Other areas of education are in the public programs offered year-round in visitor center areas and in the field, online through social media and outreach through the park's extensive web offerings, and through written publications.

The Joshua Tree National Park Association (http://www.joshuatree.org/) is the park's primary non-profit partner. The mission of the association is to assist with natural and cultural resource preservation and educational activities of Joshua Tree National Park. The association coordinates active adult education programs through its Desert Institute that range from evening lectures to weekend long field classes.

Anza-Borrego Desert State Park -- also has an active resource education program that targets all ages. Partnerships and programs that aided in accomplising this include :

- Camp Borrego in partnership with Anza-Borrego Foundation, San Diego County Department of Education, and the Desert Protective Council (2004-2016)
- PORTS (Parks Online Resources for Teachers and Students) Program (2005 – 2016)
- Junior Ranger Program
- 3rd Grade Ranger-Ride-Along Program
- Night Sky Interpretation Program

Trained volunteer naturalists are important partners in Anza-Borrego Desert State Park and the other core areas (Photo by Bob Perry).

Death Valley National Park -- has conducted interpretive and educational ranger programs within the park since the 1930s. These personal service programs have included nature walks, history programs, evening slide programs on most every natural and cultural resource topic in the park, and night sky interpretation. Though primarily designed for the general public visiting the park, school and other civic groups have been given programs upon request. In the past eight years the park has greatly expanded its environmental education program geared specifically towards students of all ages, but primarily in the 4th-8th grade levels. Two programs that best illustrate the depth of the educational effort are the Death Valley ROCKS (Recreational Outdoor Campaign for Kids through Study) and Climate Change in the WILD (Water, Invasive species, Landscape ecology, energy Development) West.

ROCKS is a 2-night, 3-day camping and inquiry-based experiential education program. An example of the activities the students are engaged in includes collecting data on the invertebrate populations of Salt Creek, which are uploaded to the Stroud Water Center's Leaf Pack Network national database. The ROCKS students also collect phenology data on the creosote and desert holly plants near Salt Creek. Phenology is the study of periodic life cycle events in living things. Small shifts in the year-to-year timing of these events can help scientists understand the impact of climate change on regional ecology. Data collected by ROCKS students are uploaded into the National Phenology Network's Nature's Notebook database.

WILD is a multi-agency, multi-organization regional partnership to promote STEM (Science, Technology, Engineering, Math) career choices in young people. Students learn the technology and field skills (GIS software, use of remote sensing data, on-the-ground data logging, etc.) necessary to succeed in planning- and conservation-related occupations. Scientists, park rangers, and others serve as guest instructors in the classroom and as field trip leaders. It

integrates understanding of climate change-related environmental issues across multiple scales (from a single home to the city to the watershed to the desert southwest).

Additionally, Death Valley hosts several youth groups in the park each year to collaborate on field projects. They have the opportunity to learn about park management and desert ecosystems. These include Youth Conservation Corps, AmeriCorps, alternative spring break college and high school students, or Boy Scouts of America groups. Their participation is encouraged by providing leadership and supervision for the projects, and providing free lodging for them while they are here.

The park's social media program is intended to reach youth audiences who may not have an opportunity to come to the park. The park has solicited involvement from a nearby school to generate input for the social media sites.

3. ECOSYSTEM SERVICES:

3.1 If possible, provide an update in the ecosystem services provided by each ecosystem of the biosphere reserve and the beneficiaries of these services.

(As per previous report and with reference to the Millennium Ecosystem Assessment Framework and The Economics of Ecosystems and Biodiversity (TEEB) Framework (http://millenniumassessment.org/en/Framework.html and http://www.teebweb.org/publications/teeb-study-reports/foundations/)).

There are two major ecosystems "bioregions" delineated in the Mojave and Colorado Deserts BR – Mojave Desert and Colorado Desert portion of the Sonoran Desert (http://www.werc.usgs.gov/researchtopicpage.aspx?id=20). The underlying environmental conditions in each ecosystem interact with landscape features to underpin biological processes and ecosystem services across the Mojave and Colorado Deserts BR.

Badlands feature in Colorado Desert Region of the Mojave and Colorado Deserts BR

Parciular ecosystem services include:

A. Provisioning Services

Provisioning Services exist within the buffer and transition areas where partnerships and cooperative efforts take place. Examples of these services include the harvesting of native fish

and game animals (e.g., mule deer, bighorn sheep, wild turkey, quail, waterfowl, and dove). Bird watching, and wildflower observing are common activities. Rivers and waterways in these areas serve a large agricultural community (Coachella and Imperial Valley agricultural landscapes), as well as agriculture across the international boarder into Mexico. Wind, solar, and geothermal energy is harvested from various portions of the buffer and transition areas. Additionally, low levels of night light pollution in regions of the Mojave and Colorado Deserts BR has led to the town of Borrego Springs, California, the gateway to the Anza Borrego Desert State Park core area, receiving certification by the International Dark-Sky Association to become California's first and world's second International Dark Sky Community, providing opportunities for star and galaxy gazing to local residents and national and international tourists through informal and formal tours provided by the local tourist industry. The BR also influences soil and air quality, as well as carbon sequestration in its above and below-ground portions of its deep-rooted desert vegetation, and major wildflower blooms that help maintain local, regional, and migratory populations of pollinators, including insects, birds, and bats.

Stargazing program at Anza-Borrego Desert State Park (photo by Robert Theriault)

Hooded Oriole on Ocotillo (Photo by Bill Gracey)

Poppies (Photo by Bill Gracey)

A view of Badwater Orion from Death Valley National Park (an International Dark Sky Park). (Photo by Tyler Nordgren, presented at https://www.nps.gov/deva/learn/nature/lightscape.htm)

A view of the Milky Way from Anza-Borrego Desert State Park (Photo by Aaron Dennis)

B. Regulating Services

Regulating Services occur in both ecosystems, providing wetland, upland, and sensitive resource protection, with a priority to maintain water quantity and quality for farmers within the Coachella and Imperial Agricultural matrices and international cities, including Las Vegas and the City of San Diego.

C. Cultural Services

Cultural Services are in the form of recreation, tourism, spiritual, educational, heritage, and aesthetics.

3.2 Specify if there are any changes regarding the indicators of ecosystem services that are being used to evaluate the three functions (conservation, development and logistic) of the biosphere reserve. If yes, which ones and give details and update.

All three core areas contain millions of acres of federal or state designated wilderness that conserve biodiversity, as well as broad-scale biological and meteorological processes. For example, Death Valley National Park contains 3.37 million acres, with over 3.1 million identified as designated wilderness. Topographical features and climatic conditions serve to isolate populations; while this reduces movement of individuals between populations, it also protects populations from outside influences. A primary tenet of the National Park Service and California State Parks is protection and conservation of wildlife and genetics of native species. Death Valley was first established as a national park site in 1933, and from its establishment wildlife within its borders has been protected and studied. For many species, this translates to a policy of non-interference in their life-processes. Where necessary, protections may be

extended beyond that provided by park existence, including working with other agencies in management and protection of sensitive species. By definition, a sensitive species is any species with special status, be it federal or state, a species of concern with government(s), on a rare or watch list, or a species of significance to the park. Sensitive species are given extra consideration and protections when they occur within project areas in all three core areas.

As part of recent development pressures focused on alternative energy development in the Mojave Desert (i.e. large scale wind turbine and solar array development), Joshua Tree, Mojave and Death Valley National Parks have initiated a connectivity project to better understand what important wild life corridors connect the parks and other protected lands in the park. The final product is being refined but will assist the Mojave Desert protected areas in defining what critical connectivity exists in the Mojave Desert that is in danger of being compromised as a result of future energy and transportation development.

3.3 Update description on biodiversity involved in the provision of ecosystems services in the biosphere reserve (e.g. species or groups of species involved).

Biodiversity has been a major focus of conservation across the three areas that make up the Mojave and Colorado Deserts BR, and designated authorities, researchers, and environmental agencies have ben involved in documenting, protecting, and restoring biodiversity in various areas. The BR framework with Anza Borrego, Joshua Tree and Death Valley providing stable reserves within the larger landscape has provided an opportunity for desert managers to consider wildlife corridors into development and planning efforts that transpire in the buffer and transition areas. These efforts generally are in the form of habitat consevaiton planning areas that target multiple species protection, such as the Coachella Valley Multispecies Habitat Conservation Planning Area and Imperial Valley Habitat Conservaiton Planning area, both of which are targeting hundreds of species. Specific examples of how the core areas contribute to biodiversity conservation are included in the following paragraphs.

Anza-Borrego Desert State Park -- completed a general plan in 2005, which creates a framework to guide day-to-day decision making, and focused managrement, specific project, and other proposed plans within this core area. This plan included an investigation into species richness by taxonomic group:

A. Amphibians, Reptiles, and Fish

Currently, Anza-Borrego Desert State Park core area lies within the geographic ranges and suitable habitats of 14 species of amphibians, eight of which have been documented, with the remaining having geographic ranges that span across this and the surrounding buffer and transition areas. Common amphibians include pacific tree frog, California tree frog, red-spotted toad, and western toad. Amphibians here are primarily restricted to isolated wetlands surrounded by a xeric terrestrial landscape, leading to amphibians being extremely susceptible to extirpation dur to human activities, exotic species invasions, and climatic shifts. This core area contains suitable habitat within the geographic ranges of 60 reptiles, comprised of 31 taxa (28 species and 3 subspecies) of lizards, 28 taxa (24 species and 4 subspecies) of snakes, and 1 species of tortoise. Of these, 51 species have been documented in the core area, and incidental observations for the remaining 9 species continue to be sought. In addition to night snakes and flat-tailed horned lizard, common species include chuckwalla, granite spiny lizard, desert iguana, red diamondback rattlesnake, Colorado Desert sidewinder, speckled rattlesnake, and Sonoran gopher snake. The occurance and distribution of many of these taxa is largely dependent on the unique environmental conditions and habitat conditions witin the Mojave and

Colorado Deserts. Fish within the Anza-Borrego Desert State Park core area occur mainly in remnant palm oasis pools; other ephemeral waters are too intermittent to support coldwater fisheries. Native fish include the desert pupfish, and several non-fish exist, including carp, tilopia, catfish, and bass.

Palm oasis habitat (Photo by Mike Ault)

B. Mammals

Within Anza-Borrego Desert State Park, there are 31 species of rodentia, 11 species of bats, several species of shrews and moles, as well as numerous larger mammals, such as Peninsular bighorn sheep, mule deer, coyote, grey fox, bobcat, mountain lion, ringtail, raccoon, spotted skunk, and striped skunk.

C. Birds

Avian species in the Anza-Borrego Desert State Park core area far outnumber those of other vertebrate taxa (England and Laudenslayer 1995). To date, 297 avian species have been document in this core area, with over 50 of these being year-round residents. This high avian species richness is exceptional given the limite geographic extent of wetland, ponds, and lakes in the region. Resident species include Gambel's quail, phainopepla, and cactus wren, and migrants that breed, overwinter, or stopover include Swainson's hawk, willow flycatcher, western bluebird, lesser nighthawk, least Bell's vireo, Lucy's warbler, and turkey vulture. Due to its high avian diversity, the Anza-Borrego Desert State Park was designated a Globally Important Bird Area by the American Bird Conservancy in 2001.

D. Plants and Insects

Plants and insects are recognized as important components of biodiversity, and as such are being incorporated into inventory, monitoring, with the intention of learing more about their functions in providing ecosystem services.

Joshua Tree National Park -- lies along the east-west transverse ranges of the Little San Bernardino Mountains. The southern boundary of the park follows the base of these mountains along the northern edge of the Coachella Valley; the northern boundary is defined by the Morongo Basin. In terms of ecological uniqueness, Joshua Tree National Park lies at the convergence of two deserts, two large ecosystems whose characteristics are determined

primarily by elevation. Below 3,000 feet, the Colorado Desert encompasses the eastern part of the park and features natural gardens of creosote bush, ocotillo, and cholla cactus. The special habitat of the Joshua tree is found in the higher, moister, and slightly cooler Mojave Desert. In addition to Joshua tree forests, the western part of the park also includes some of the most interesting geologic displays found in California's deserts. The park includes five fan palm oases, which are the few areas where surface water occurs naturally.

Its boundary currently contains 789,745 acres in federal ownership and 20,570 acres of non-federal lands. Of these lands, 557,802 acres are designated as wilderness. The park lies within both San Bernardino and Riverside counties approximately 100 miles from the Los Angeles metropolitan area and within a three-hour drive of more than 18 million people. The natural desert expanse of the park provides ideal conditions for campers, photographers, star gazers, naturalists, as well as anyone seeking space for quiet introspection, exploration or outdoor learning. In addition, the extensive granite rock outcrops, boulder piles, desert mountain ranges and canyons create a world-class destination for rock climbers, as well as hundreds of miles of scenic trails for hikers and equestrians.

Given the park's location along a transition line between two desert ecosystems, the park is home to a fascinating diversity of desert plants and animals. More than 700 species of flowering plants have been identified, with the most distinctive being the ocotillo, the cholla, and the Joshua tree. The park also preserves more native palm oases than any other unit in the National Park System. These oases support vegetation and wildlife distinct from other species found in the park. The park contains highly diverse fauna. More than 250 species of birds have been recorded at Joshua Tree National Park, and many unique species of reptiles, amphibians, mammals, and invertebrates. Some examples include the desert tortoise, the California treefrog, the desert bighorn sheep, and a species of tarantula that is found only in the Joshua tree plant community.

Death Valley National Park -- contains a great range of elevations and habitats support a variety of wildlife species, including 51 species of native mammals, 307 species of birds, 36 species of reptiles, three species of amphibians, and five species and one subspecies of native fishes. Small mammals are more numerous than large mammals, such as desert bighorn, coyote, bobcat, mountain lion, and mule deer. Mule deer are present in the pinyon/juniper associations of the Grapevine, Cottonwood, and Panamint Mountains (https://www.nps.gov/deva/learn/nature/animals.htm). Additionally, Death Valley is how to numerous endemic threatened/endangered plants and animals such as the Devils Hole pupfish.

3.4 Specify whether any recent/updated ecosystem services assessment has been done for the biosphere reserve since its nomination/last report. If yes, please specify and indicate if and how this is being used in the management plan.

We do not have a formal BR-wide ecosystem services assessment at this time. However, the resource agencies under which the core area authorities operate do have inventory and monitoring operatoins that lend themselves to developing an assessment. For example, California State Parks developed the Inventory, Monitoring, and Assessment Program to systematically monitor and assess the status of natural resources in the California State Park System, and the program is currently in the process of assessing how to adapt to rapidly changing environment conditions and system processes, such as ecosystem services under climate change. The National Park Service Mojave Inventory and Monitoring Network began a program in 2011, and includes monitoring springs and upland habitats in Joshua Tree and Death Valley National Parks. Data mining efforts were conducted that captured information

about species documented in paper files and reports. These reports and databases are available through the National Park Service Integrated Resource Management Applications (IRMA) portal

Learn more at:

https://www.parks.ca.gov/?page_id=836
http://science.nature.nps.gov/im/units/mojn/
https://irma.nps.gov/App/Portal/Home

4. THE CONSERVATION FUNCTION:

[This refers to programmes that seek to protect biodiversity at landscape and site levels and/or ecological functions that provide ecosystem goods and services in the biosphere reserve. While actions to address this function might be focused on core area(s) and buffer zone(s), ecosystem dynamics occur across a range of spatial and temporal scales throughout the biosphere reserve and beyond.]

4.1 Significant changes (if any) in the main habitat types, ecosystems, species or varieties of traditional or economic importance identified for the biosphere reserve, including natural processes or events, main human impacts, and/or relevant management practices (since the last report).

Biosphere-wide changes to specific components of the environment

Significant changes to habitats and species have taken place, which have spurred changes to biodiversity and environmental protection programs.

A. Physical environment and habitat components

Climate, fire, hydrology, air quality, night sky, and bodies of water are changing throughout the Mojave and Colorado Deserts BR. Water in desert systems is considered a critical resource that can limit wildlife and plant populations, and there is a significant focus on monitoring and management of above and below-ground water resources. Through monitoring, signs of stress and dying of dominant tree species in isolated desert drainages is emerging along the elevational gradient between the relatively low-elevation desert floor and the relatively high-elevation desert benches. Prior to this past decade, these drainages historically supported a rich assemblage of dominant, native trees, including sycamore, willow, mesquite, and palm. Increased rates of crown dieback, falling limbs, insect invasions, reduced aerial cover, and mortality, as well as intrusion of surrounding desert scrub vegetation are being documents and appear to be symptomatic of continued drought stress. Permanent, above-ground water associated with palm oases appear to be flowing shorter distances compared to previous decades, and some ephemoral springs have become subterranean for increasingly longer periods.

Wind, temperature, and precipitation levels have also changed over the past 10 years. Wind and temperature have increased, has precipitation has decreased both in quantity and duration of the wet season, leading to brief periods of rainfall within longer, hotter, and windier dry seasons. This pattern reflects a general trend in drier, hotter, and windier conditions across the desert region.

B. Native wildlife

Hundreds of avian species occur throughout the BR, and the core area authorities, non-profit conservation and scientific organizations, as well as private citizens conduct surveys for

hundres of avian species across the BR, including Hawk Watch, which has documented very large congregations of important raptor species, such as Swanson's hawks, long-eared owls, and turkey vultures migrating through, as well as roosting, foraging, and/or breeding in the BR. Additionally, numerous neotropical migratory birds migrate through or to the BR to nest in northern latitudes, and land management takes place to improve conditions for may species. One federally protected species, the Least Bell's vireo, has responded positively to habitat and invasive species management activities in the BR. Annual surveys indicate that populations have been increasing this past decade, and that new offspring are emigrating to occupy new areas, effectively recolonizing portions of their range. Thus, the Mojave and Colorado Deserts BR has been contributing to the recovery of this rare bird by functioning as a source population from which young disperse from.

Other wildlife species, such as western toads and desert pupfish, are exhibiting declines to due reductions in size or loss of freshwater sources, while others, like the endangered Peninsular bighorn sheep have been rebounding throughout their range in the BR over the past decade. The entire range of Peninsular bighorn sheep within the United States lies within the southwest portion of the Mojave and Colorado Deserts BR; the sheep's range also extends into the Mexico. From 1992-2010, 12% of monitored sheep in the United States died annually. However, conservation efforts have contributed to an overall positive population growth rate over this period, with the population increasing from its lowest reported abundance of 276 sheep in 1996 to the most recent rangewide estimate of 955 sheep in 2010. Aubstantial genetic variation and gene flow is also occurring among subpopulations and northern Mexico is occuring.

Volunteers at the Anza-Borrego Desert State Park summer sheep count (Photo by Don Endicott)

C. Invasive plant species

Throughout the BR, invasive plants, invertebrates, vertebrates, and fungus continue to emerge. Species, such as the brown widow spider, Africanized honey bee, Argentine ant, gold-spotted oak borer, polyphagous shot hole borer, and chytrid fungus (a fungal pathogen that causes amphibians to die worldwide) are present, leading to actions to iradicate or manage some of these species. In this desert environment, many invading plant species also exist, including saltcedar in desert dry washes, as well as African fountain grass, medusa head, Sahara mustard, Volutaria, Lepidium, Russian thistle, rough cocklebur, shepherd's purse, tumble mustard, common chickweed, and many others. Thousands of acres have been treated for tamerisk and other plant species, although this generally involves perpetual management and funding.

D. Main human impacts

Increased human development and recreation has had impacts throughout portions of core area, buffer, and transition areas in the BR. Activities include private and commercial housing, industry, infrastrure, wind, solar, and geothermal energy, non-green industry, transportation, tourism, and recreation. While renewable energy projects help meet energy demands at lower prices, its expansion into buffer areas has been demonstrated to have negative impacts on sensitive and rare species, such as the federally endangered Peninsular bighorn sheep (e.g., they generally do not use areas under wind turbines), sensitive and protected raptors, such as many thousands of golden eagles, hawks, falcons, and bats that are killed by wind turbines, and avian species that die at commercial-size solar energy facilities. These types of impacts contribute to the continued loss and fragmentation of natural habitats in buffer and transition areas throughout the BR that are not included in HCPs or core areas.

Examples of specific changes in core areas

Death Valley National Park -- Restoration has begun at Death Valley's largest discharge spring, Travertine Spring. One half of the discharge has been returned to natural discharge points, and the remainder is being planned for restoration in 2013. The result has been the recovery of acres of wetlands and miles of braided spring brooks. The area is habitat for the Nevares Naucorid (candidate species under the Endangered Species Act), and it has not had perennial surface flow for approximately 90 years.

Impacts to the Devils Hole ecosystem were first realized in the early 1970s. The impact of groundwater pumping directly affected the ecosystem of Devils hole and began the population decline of the Devils Hole Pupfish, a critically endangered species. Over the last 10 years the population has continued to increase from a low of 35 fish to 144 counted during the spring 2016 count. Despite this steady increase the population faces multiple imminent threats from human development. Through collaborative management of the population with the US Fish and Wildlife Service and the Nevada Department of Wildlife we have started to study the effects of natural disturbances on this system. Throughout time this system is subjected to a variety of random naturally occurring disturbances such as terrestrial flash flood and subterranean earthquakes which cause seiches in the ecosystem.

Two critically endangered plant species (Eureka dune grass, evening primrose) at Eureka Dunes have also continued to experience population declines over the past decade. Current research is documenting population trends and searching for answers to the decline.

Death Valley has had two low elevation (<2000 feet) large wild fires (1000+ acres) over the past ten years. Lower elevations of the Mojave Desert are not wildland fire adapted ecosystems. The introduction of exotic annual weeds in these ecosystems has established a grass-fire cycle in these areas of the park. This has the potential to impact ecosystem structure and function in the long term. Higher elevation ecosystems in the park are covered with pinyon-juniper and sagebrush, blackbrush plant communities. These communities are primed to experience natural stand replacement wild fire events. The park has initiated a prescribed fire program to begin to implement higher elevation fire effects monitoring and protect high value natural and cultural resources in the park.

Joshua Tree National Park -- Wildfire has caused significant changes in the ecosystems where it has spread in Joshua Tree National Park. This desert ecosystem is not fire adapted and exotic grass invasion, promoted by anthropogenic nitrogen deposition, has caused more and larger

wildfire events. Wildfire in these systems tends to remove most, if not all, trees and shrubs that seem to take decades to centuries to re-establish. However, recent study of the successional trends in these ecosystems does show promise of a recovery from wildfire by the flora and fauna although it may take a century or more for this recovery to be realized. Repeat burning of habitats is of high concern as it may hault or redirect the succession of vegetation communities, effectively causing local conversions of vegetation types efore they can naturally recover. The park has a fire management plan for suppressing all wildfires.

Anza-Borrego Desert State Park – The frequency and size of area burned by wildfires in Anza-Borrego Desert State Park has increased over the past decade. From 2001 through 2013, a total of 19 fires that were at least five acres in size burned over 77,000 acres predominantely along the western boundary of this core area. About 80% of that acreage burned in seven fires that occurred in the summer months of July and August. This is two months earlier than the peak fire season in the remaining 80% of San Diego County lying outside this core area. Fires in this core area have occurred during high temperatures, although they have not been associated with high winds. Additionally, these fires are believed to have been fueled by increases in invasive annual grasses and forbs, which increase the geographic continuity of fuels across the park, as has been observed in the Joshua Tree National Park core area. This increase in fire fequency along the western boundary of this core area also appears to be interacting with long-term drought conditions to alter the trajectory of plant succession, leading to what is referred to as rapid vegetation type conversions.

Palm oases are beginning to experience relatively longer-term drought periods, fire, and risk of infestations of invasive insects.

Containing over 60% of the endangered Peninsular bighorn sheep range and population in the United States, the Anza-Borrego Desert State Park core area is critical for this species and its recovery. Efforts by the California Department of Fish and Wildlife, Anza Borrego Desert State Park core area, and many partners across the range of the sheep have focused on conservation actions and population monitoring over the past decade; these efforts have led to increases in abundance throughout much of its range.

The distribution of Volutaria is increasing across this core area. African fountain grass has been invading and is a focus of management since 2004. Feral horses and cattle were present in small numbers, and removed in 2003.

4.2 Describe the main conservation programmes that have been conducted in the biosphere reserve over the past ten years as well as current on-going ones. Note their main goals and the scope of activities, e.g. biotic inventories, species-at-risk, landscape analyses, conservation stewardship actions. Cross reference to other sections below where appropriate.

A variety of programs that seek to concerve biodiversity and/or ecological functions at landscape and site levels exist within the boundary of the Mojave and Colorado Deserts BR.

Land Acquisition and Protection Programs

1. Changes to the status and size of areas across the Mojave and Colorado Desserts BR.

   A variety of regional, state, and federal legislative processes govern changes in the BR. For example, the U.S. federal Wilderness Act was signed into law in 1964, recognizing wilderness as "an area where the earth and its community of life are untrammeled by man, where man himself is a vistor who does not remain." Additionally, the California Wilderness Preservation Act was passed in 1974 "to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas on state-owned lands within California, leaving no areas designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the State of California to secure for present and future generations the benefits of an enduring resource of wilderness." The federal legislation has resulted in converting more than 8 million acres of land within the Mojave and Colorado Deserts BR to designated federal wilderness since 1994 (Table 4), and the state legislation led to the designation of 458,000 acres of wilderness (135,000 acres in the Santa Rosa Mountains State Wilderness and 321,000 acres in Anza-Borrego Desert State Wilderness) within the Anza-Borrego Desert State Park core area. More specfically:

   a. The status of Death Valley and Joshua Tree National Monuments were elevated to National Parks under the California Desert Protection Act of 1994; this also increased the size of Death Valley National Park by 1.4 million acres and Joshua Tree National Park by 234,000 acres. It added 7 million acres of wilderness in and out of the core areas, leading to greater resource protection in previously designated buffer and transition areas, and increased the potential success of landscape-scale linkages being developed to protect ecological functions and processes across the desert ecoregions that make up the Biosphere Reserve.

   b. The status of the Santa Rosa Mountains Wildlife Management Area was changed to the Santa Rosa and San Jacinto National Monument under the National Park Service, effectively increasing the size of this portion of the original Anza-Borrego Desert State Park core area by 280,000 acreas, and adding lands administered by the Bureau of Land Management and US Forest Service. This conversion in status and increased size helps to improve regional and landscape planning efforts to encourage biodiversity and ecological functions.

   c. The size of the Anza-Borrego Desert State Park core area was enlarged by 15,574 acres between 2004-2012 through a series of land acquisitions (Figure

7), and the majority of this core area has been designated state wilderness, providing additional protection for natural resources.

Table 4. Acres of fedeal wilderness designated in the Mojave and Colorado Deserts BR.

Year	Acres
1994	7,140,939
2002	440,484
2004	477,958
2006	20,496
2009	96,268
Total	8,176,145

These wilderness units add substantially to the network of core areas within the biosphere reserve, making landscape scale planning for geographic connectivity a possibility (Figure 4). For example, within the Mojave and Colorado Deserts BR lays the center of desert tortoise and desert bighorn sheep habitats, and the addition of wilderness within the BR has helped improve the opportunity to maintain broad-scale geographic linkages for the dispersal and genetic connectivity of these species.

2. Additional programs have led to changes in the protection status of portions of the buffer and transition areas.

   Changes in buffer and transition areas include the designation of critical habitats for federally threatened and endangered species, designation of wilderness areas, and establishment of multiple and single species habitat conservation plans (Figure 5). Habitat Conservation Plans (HCPs) are formal plans required as part of an application to the U.S. government to incidentally take a species protected or species with special status (i.e., species proposed or candidates for listing) under the federal Endangered Species Act (ESA) on non-federal land. The intent of HCPs is to balance the need for human development and growth with species conservation and habitat preservation.

   Several habitat conservation planning areas are in place within the buffer and transition areas of the Mojave and Colorado Deserts BR.

   a. One example in the BR is the Lower Colorado River Multi-Species Conservation Program (LCR MSCP), created in 2005 to balance the consumptive use of Colorado River water for humans with the conservation of native species and their habitats dependent on the ecosystem dependent on that water. The plan covers more than 400 miles of the lower Colorado River, from Lake Mead to the southernmost border with Mexico, and includes lakes Mead, Mohave, and Havasu, as well as the historic 100-year floodplain along the main stem of the lower Colorado River

      Learn more at : http://www.lcrmscp.gov/general_program.html

   b. Another example is the Coachella Valley Multiple Species Habitat Conservation Plan, which filled a critical conservation gap within the Mojave and Colorado Deserts BR. The Coachella Valley, California is one example of how a multiple

species HCP has worked to allow for development and conserve important habitats and linkage corridors among the Mojave and Colorado Deserts BR core areas. The Coachella Valley contained nearly a million acres of mostly privately owned land between Joshua Tree National Park, Santa Rosa and San Jacinto Mountains National Monument, and Anza Borrego Desert State Park prior to 1980. These lands were the focus of large-scale human development activities since the 1970s, which continues to this day. In addition to being prime real estate for large-scale urban development, these lands were also the home of many rare species and species endemic only to that area of the world, as well as providing critical landscape connectivity between core areas identified for conservation. Ten federally and/or State of California listed threatened and endangered species find all or a significant portion of their range in the Coachella Valley. The western Coachella Valley constituted the remaining connectivity for conservation of main habitats, species, ecosystems, and natural processes between the neighboring Peninsular Mountain Range, which physically and biologically is an extension of Baja California, Mexico, and Transverse Range, which is a southern extension of species otherwise confined to northern California and further north. Additional critical connectivity exist to the east, connecting the Eagle Mountains in Joshua Tree National Park to the Orocopia and Chuckwalla Mountains to the south.

These geographic and environmental constraints posed challenges to the growing economic prosperity of the Coachella Valley, a region that includes nine incorporated cities, and large unincorporated areas of private land under the jurisdiction of the County of Riverside. Conversely, the desire to expand and start new human developments in the region threated the viability and persistence of the endemic plants and animals present there. The solution occurred in two steps:

1) Secure the remaining areas of habitat considered to be at risk of being lost to development. The most at-risk habitat in the Coachella Valley was an extensive sand dune system which once covered 100,000 acres of the Coachella Valley floor and included the only remaining habitat for two federally and state endangered species (a lizard and a plant). By 1980, over 90% 0f that dune habitat had been converted to vacation homes and golf courses. To maintain the viability of the dune habitats, a habitat conservation plan was created to protect the remaining dunes and the outside sources of sand that was naturally deposited on them (a total of 13,000 acres) while allowing for the continued human/economic development of remaining fragmented dune areas with severed sand sources or those that were too small to sustain viable populations of those endemic species. This conservation plan was approved by all nine cities and Riverside County, California.

2) Expand protection to 27 species, 27 vegetation associations, and the remaining landscape linkages for ecological connectivity. Approved in 2008, this multiple species plan identified 240,000 acres for protection, while streamlining the approval process for human devleopment in the remaining private lands. By design, the multiple species plan also encompassed the southern portion of Joshua Tree National Park, all of the Santa Rosa and San Jacinto Mountains National Monument, large areas of

California State Park lands, a US Fish and Wildlife Refuge, Bureau of Land Management lands, as well as fostered the establishment of a California State land conservancy and non-government organizations that purchase lands for conservation and facilitate public access, awareness, and environmental education.

This multiple species plan catalyzes and requires that the federal, state and private land management and protection agencies communicate and collaborate to meet conservation objectives. This process is fostered by regular meetings by by different established groups -- a Biological Working Group, Reserve Managers Unit Committee comprised of land managers, and a Reserve Management Oversite Committee made up of public agency leaders. To this day, this communication has proven critical to the success of the multiple species plan, representing a significant contribution to regional and multilateral cooperation for achieving the objectives and developing mechanisms that contribute to the Mojave and Colorado Deserts BR.

Colorado Desert vegetation greening up after rainfall in a designated wilderness area within the Anza-Borrego Desert State Park core area.

Resource Maangement Programs

The National Park Service and California State Parks core areas in the BR all have extensive resource management programs that contain specified goals and broad scopes of activities. Some of these programs, scopes, and activities have been laid out in previous sections. To illustrate the depth and breadth of these programs, we provide the following description of the resource management program in the Anza-Borrego Desert State Park core area.

The primary conservation program for the Anza-Borrego Desert State Park core area is the California State Parks Natural Resources Division. As described in section 7, Anza-Borrego

Desert State Park represents one of three core areas witin the Mojave and Colorado Deserts BR. The Natural Resources Division includes local, regional, national, and international conservation initiatives, as identified in http://www.parks.ca.gov/?page_id=21320 and the 2005 Anza-Borrego Desert State Park General Plan. International conservation initiatives include monitoring, recovering, and enhancing populations of sensitive migratory bird species under national and international environmental protection, as well as monitoring and habitat management for protected Peninsular bighorn sheep, which range across the international border with Mexico.

The primary funding programs used to support management and conservation activities in the Anza-Borrego Desert State Park core area are formalized under the California State Parks Natural Resource Program Areas (http://www.parks.ca.gov/?page_id=21320) as:

A. Resource Management Planning

This group is comprised of environmental scientists that implement biotic and abiotic inventory, monitoring, restoration, conservation, management, and ecosystem recovery activititis in the Anza-Borrego Desert State Park core area. These individuals collaborate with researchers to incorporate sound scientific concepts, principles, and theories into studies intended to understand baseline patterns and advanced biological processes, such as species interactions, wildlife habitat relationships, and wildlife space use and demographic responses to human disturbance to inform traditional and adative management plans to best manage and/or restore wildlife populations and ecological function. There are numerous recognized accomplishments by this group, one of which is represented by an agreement between the Anza-Borrego Desert State Park and University of California, Irvine Research Center. This collaboration is the catalyst for new research and conservation, and monitoring, enabling both parties to embrace the integration of sound science into management. This group works closely with facilities management and reviews research permits to balance research needs with resource protection/management and visitor safety. In cooperation with Anza-Borrego Foundation, Denver Zoo Foundation, Mongolian Academy of Sciences, and United Natoins Development Program Special Protected Area Network, this group also is engaged in international conservation through developing a “Sister Park” relationship with Ikh Nartiin Chuluu Nature Reserve in Mongolia (https://www.parks.ca.gov/pages/712/files/Ano_Mongolia_Sisterpark_ResolutionMay2008.pdf). This partnership includes a conservation agreement that emphasizes:

- Sharing of expertise to increase natural resource conservation in Ikh Nartiin Nature Reserve through mutual cooperation.
- Supporting conservation efforts to preserve natural and cultural resources in Ikh Nartiin Chuluu Nature Reserve. Issues of illegal wild sheep poaching, taking of foxes, wolves, and wild cats for fur, and unauthorized mining, will be addressed.
- Supporting coordinated efforts to provide donated equipment to Ikh Nartiin Chuluu Nature Reserve rangers and researchers. Ranger salary, uniforms, binoculars, boots, GPS units, used laptops, and a patrol motorcycle have been donated so far.
- Serving as subject matter experts to assist in planning and establishing of visitor service facilities and the training of staff.
- Facilitating exchange of information, education and interpretation of mutual resources.
- Sending volunteer delegations to Ikh Nartiin Chuluu Nature Reserve to assist the Nature Reserve staff and Soum government with park management practices.

B. Natural Resource Acquisition

The Anza-Borrego Desert State Park core area acquisition program focuses on three areas of interest: natural resources, cultural resources, and recreational opportunities. The most acreage acquired is for natural resource purposes. An agreement between Anza-Borrego Desert State Park and the Anza Borrego Foundation has led to the acquisition of numeorus parcels of land for inclusion into Anza-Borrego Desert State Park protection and management programs (Table 4, Figure 6).

Table 4. Land acquisitions by Anza-Borrego Foundation between 2004-2014 that converted buffer and/or transition habitat to Anza-Borrego Desert State Park core area.

Parcel Acquired	Year	Area (acres)
Vallecito Ranch	2004	3,339
Horse Canyon	2004	1,298
Tulloch Ranch	2005	2,080
Fish Traps	2005	352
Desert Cahuilla	2010	5,773
Las Arenas Ranch	2006	152
Timper/Patterson	2010	646
Norm Robers	2011	423
Porer Trust	2005	438
Jacumba Eade - TNC	2012	1,073
Cultural Preserves*	2004-2014	43,242

** These are upgraded land protection status for cultural resources (they generally do not constitute land acquisitions)*

C. Landscape/Habiat Linkages

The Natural Resource Division's acquisition program within California State Parks also focuses on acquiring linkages (connection key parks to other protected areas), lands within the keystone watersheds and effective buffers to help support the conservation of sustainable ecosystems (http://www.parks.ca.gov/?page_id=22305).

D. Inventory, Monitoring, and Assessment Program

The Inventory, Monitoring, and Assessment Program provides goals, guidance, and standards for efforts related to the systematic evaluatation of vegetation, wildlife, and physical natural resources in California state parks. Evaluations consist of collecting data through various scientific means in each State Park System unit. Data is generally quantitative and consists of counts and measures of natural resources. Examples include measuring stream water quality, the distribution of various species of plants in an area, and counting the number of offspring of endangered animals. This program has recently begun to merge incidental observations and long-term observational datasets of wildlife and plants into databases to assess trends in various biological processes across the Anza-Borrego Desert State Park core area.

E. Geologic Features and Landscapes

Geologic characteristics are responsible for soil formation, landscape shape and erodibility, and as such receive much attention by this group. These characteristics of basic geology influences plant growth and animal habitat, distribution, and migration patterns. Geologic issues are often key to resource planning and management on a watershed scale. Sediments accumulate behind dams, mass wasting and erosion can degrade water quality, and historic extractive activites,

such as logging and mining, can change the shape of the land and how geologic processes function.

F. Prescribed Fire Program

Due to dry conditions, the size, frequency, and intensity of fires have increased across California; the area burned by wildfires throughout the state over the past 2 decades has increased from 350,000 to 600,000 acres. Consequently, core areas and other state and federal resource agencies within the the BR buffer and transition areas embrace the use of prescribed fire in resource management and protection. Core areas also help motivate improved fire management in adjacent buffer areas. Core areas have Fire Monitoring Handbooks in place, and prescribed fire programs to reintroduce fire as a natural ecological process subsequent to a century of fire suppression.

Learn more at:

https://www.parks.ca.gov/?page_id=26110
https://www.nps.gov/jotr/learn/nature/fireregime.htm
https://www.nps.gov/deva/learn/management/upload/Death-Valley-NP-Fire-Management-Plan-August-2010.pdf

G. Exotic Species

One focal point of the core areas is to preserve the extraordinary biological diversity present in this desert region by restoring, maintaining, and protecting native species and natural communities. Invasion by exotic species is a threat to native species and natural environmental complexes. Weed abatement and iradication, non-native cowbird control, and wildlife habitat restoration are common practices to improve native wildlife habitat and populations within each core area, as well as the surrounding buffer area.

H. Scientific Research and Collecting

The California Department of Parks and Recreation welcomes consideration of the Anza-Borrego Desert State Park core area as a potential research site. A scientific research and collecting permit is required for most scientific activities conducted within the California State Park System that pertain to natural resources, including, but not limited to, field work, specimen collections, and the collection of data. Permits are required to collect specimens, data, and/or produce a written document of your findings, such as a dissertation, thesis, academic paper, report, or professional publication.

I. Cultural and Paleantological Resources Management

This group provides leadership for cultural and paleontological resource management and integrates closely with Anza-Borrego Desert State Park law enforcement and interpretive rangers to achieve cultural resource protection in coordination with the State Historic Preservation Office, affiliated tribes, the Borrego Springs gateway community, and stakeholders. It also oversees and works with volunteer groups and participates in planning and compliance of proposed road and utility development projects, effectively linking past and present human cultures with future generations.

4.3 In what ways are conservation activities linked to, or integrated with, sustainable development issues (e.g. stewardship for conservation on private lands used for other purposes)?

Core area authorities are engaged with partners, other state and national resource agencies, and environmental regulatory agencies to carry out conservation activities linked to renewable energy on public and private lands in the buffer and transition areas. These activies are in the form of public scoping meetings, public comments for activities proposed under the National and State Endangered Species Acts, NEPA, CEQA, National and State Clean Water Acts, and other resource protection legislation.

Death Valley and Joshua Tree National Parks -- The National Park Service's mission to protect and preserve natural and cultural resources for the enjoyment of this and future generations etches the philosophy of sustainable development into every park's mandate for the benefit of all people. Tourism sustains many local economies in proximity to National Parks in southern California that is based on outdoor recreation principles.

Through the National Environmental Policy Act, National Historic Preservation Act, and other National Park Service policy on designing projects and plans to protect park resources, project impacts are considered and mitigations for protection of natural and cultural resources are designed and implemented. Mitigations put in place by the National Park Service often extend beyond the minimum required by law or policy and are often developed by interdisciplinary input in park and between parks and other protected areas or public land management agencies.

For example, at Death Valley National Park "green" building techniques have become a standard practice. The park has installed solar panels on new and newly remodeled structures which feed back into the energy grid in southern California. This practice will continue to be implemented into planning efforts for existing structures in the park.

Death Valley has also been recognized by the International Dark Sky Association and achieved the designation of the world’s largest International Dark Sky Park. The dark skies of Death Valley offer world class opportunities for stargazing and night sky astronomy programs. Park management has made a commitment to preserve and improve the quality of the night sky, and to encourage neighboring communities to do likewise. More than 3,500 park visitors participated in night sky programs in 2012-2013. Gateway communities also offer night sky programs to encourage appreciation of this resource. These efforts have contributed to increased visitation both inside the park and to external communities.

Anza-Borrego Desert State Park -- The mission of Anza-Borrego Desert State Park is protecting and managing resources, inspiring and educating park patrons, and serving those needs of the public which are consistent with the park objectives. The park facilities necessary to support such a system are in place, and recreational activities and conservation on neighboring private lands are encouraged and in some cases geographically linked with Anza-Borrego Desert State Park. Additoinally, the environmental regulatory process provides Anza-Borrego Desert State Park the opportunity to integrate comments and recommendations into the planning of sustainable development projects. One example of this was in 2008, when the Bureau of Land Managment, California Energy Commission, USFWS, and the Department began a collaborative effort to draft a Desert Renewable Energy Conservation Plan (DRECP) covering the Mojave and Colorado/Sonora desert region of California. Anza-Borrego Desert State Park and its stakeholders were able to provide comments through the formal environmental review process.

Buffer and Transition Areas -- To date, renewable energy development in California has been permitted on a project-by-project basis. To facilitate this, the BLM has produced Programmatic Environmental Impact Statements (PEIS) for wind (BLM 2005), geothermal (BLM and USFS 2008), energy corridors (DOE and BLM 2008), and solar (BLM and DOE 2012). Through these and other efforts, renewable energy has expanded within the buffer and transition areas (wind energy: 117,185 ha of buffer, 6106 ha of transition; solar 20,027 ha of buffer, 90 ha of transition, and geothermal; Table 3, Figure 9). Plans for recreatoinal vehicle use also provides access to 10,748 ha of buffer area and 246,261 ha of transition area throughout the Mojave and Colorado Deserts BR (Table 3, Figure 4). Additionally, the West Mojave Route Network Project (WMRNP) is a travel management planning effort covering 3,742,200 ha in the West Mojave area of the California desert. Approximately 1,255,500 ha in the planning area are public lands managed by the BLM, providing for public offroad vehicular access, livestock grazing, and long-term conservation goals.

Learn more at: http://www.blm.gov/ca/st/en/fo/cdd/west_mojave__wemo.html

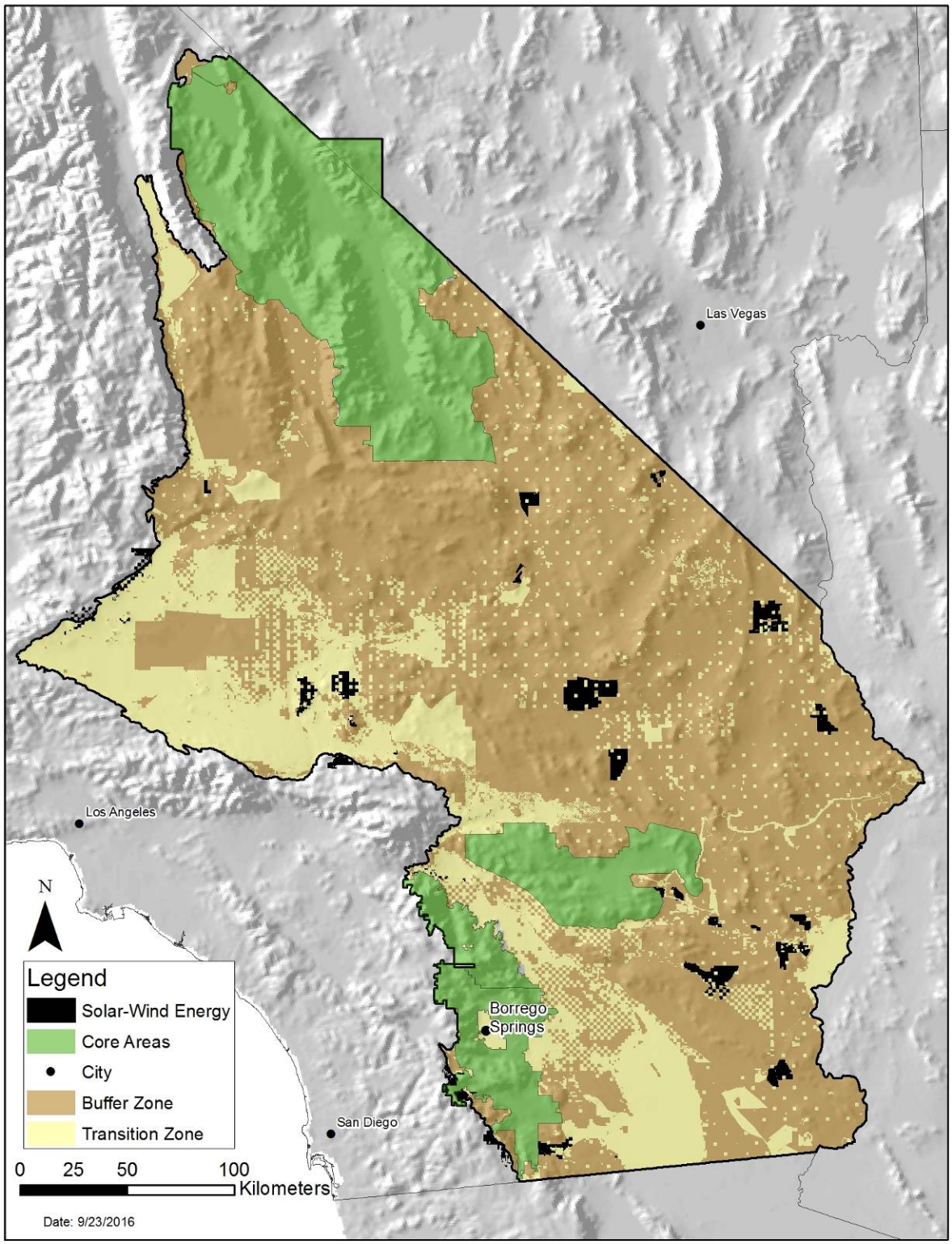


Figure 9 Renewable energy projects (Solar or Wind) present in the Mojave and Colorado Deserts Biosphere Reserve, United States, 2014.

4.4 How do you assess the effectiveness of actions or strategies applied?
(Describe the methods, indicators used).

Generally, conservation actions and strategies are assessed through monitoring before and after these take place. One conservation strategy that has been applied is the acquisition of privately owned transition areas identified as biologically or geographically (in regards to proximity or

connectivity) important for conservation. This practice has been common by the various land conservancies and foundations in the Colorado Desert portion of the BR, and measures of success have involved the quantification of area, degree of biodiversity or species richness, and/or number of rare, sensitive, and/or special status species and/or habitats. For example, the acquisition of over 15,000 acres of habitat along the border of the Anza Borrego Desert State Park core area has been deemed a success at expanding this core area to ensure the conservation of rare and sensitive species, as well as large-scale ecological processes.

The need to evaluate direct, indirect, and cumulative effects of increased visitation and recreation in core areas has only become a topic of concern over the past decade, and authorities are presently working with researchers to inventory indicators to monitor this phenomenon.

4.5 What are the main factors that influenced (positively or negatively) the successes of conservation efforts in the entire biosphere reserve? Given the experiences and lessons learned in the past ten years, what new strategies or approaches will be imost effective for conservation for sustainable development?

Communication and collaboration is by far the main factor that underlies success of conservation efforts in the Mojave and Colorado Deserts BR during the last 10 year period. This is simply becaue of the complicated authority structure we have within and among the core areas, as explained in section 7. Given the increase in population, visitation, and proposals to convert buffer lands to renewable energy production projected during the next decade, it is imperative for the Core areas of the BR to engage and assert their leadership role in conservation. Modeling and managing for migration linkages between the core areas will allow for the biodiversity contained within the reserve adapt to the pressures of development, urbanization, changing recreation activities, and climate change.

4.6 Other comments/observations from a biosphere reserve perspective.

Since the designation of the Mojave and Colorado Deserts BR, Death Valley has been designated a National Park and increased in size by 1.4 million acres to 3.37 million acres, with 3.1 million acres designated as wilderness. Due to its shere size and new land status that adds protection to its resources, we provide the following comments/observations about its conservation activities, which reflect the standard concepts and principles embraced by all the core area units. The landscape-scale continuity of this BR core area constitutes the largest National Park in the contiguous United States. Independently and collaboratively with the Joshua Tree National Park and Anza-Borrego Desert State Park core areas, this World Biosphere Reserve core area contributes to the preservation and protection of natural and cultural resources, promoting the tenets of the World Biosphere Reserve Network. Sustainability is paramount to resource management in each core areas along with promoting environmental awareness, academic research, and public education at a global scale.

The establishment of the National Park Service Inventory and Monitoring program has set in motion a national level science-based natural resource research program that promotes baseline natural resource monitoring and connects this information on a national level. This information is available to any interested agency, public or academic party. This program has ensured a professional level science program is guiding the collection and dissemination of natural resources information.

The biggest successes of Death Valley National Park's hydrology program over the last decade have been: 1) increased the number of water monitoring sites by 70%, 2) brought attention to potential cross-boundary impacts to the park's water sources from industrial development which has led to an abandonment of water-intensive technologies, 3) The Desert Research Institute (DRI) completed a park-wide survey of over 800 springs and the information was compiled in a database, 4) the Nevada State Water Engineer issued Order 1197 which prohibited new water rights applications within 10 miles DH and no changes in points of diversion within 25 miles of DH, 5) completed the park's Water Resource Stewardship plan (DRI), 6) implemented the new FC Water System and started restoration of the park's largest springs, 7) USGS developed the Death Valley Regional Flow System (DVRFS) model and the Southern Amargosa eMbedded Model (SAMM) is nearing completion.

The biggest challenges to protecting and restoring natural hydrologic systems have been: 1) a recent reduction of funding for personnel that will require the monitoring program to shrink 40% to 2009 levels, 2) a public perception that the NPS is an impediment to economic growth in surrounding communities, and 3) unwillingness of some stakeholders to conserve water.

One achievement was an increase in base funding to support conservation and recovery efforts of the critically endangered Devils Hole pupfish. This increased support allowed the establishment of an aquatics program for Death Valley National Park. This program includes a state of the art aquatic ecology (freshwater biology) laboratory. The establishment of the science-based Aquatics Program at Death Valley National Park can serve as a foundation for future research/ecology stations at other biospheres.

On July 24, 2013, Death Valley National Park completed a comprehensive Wilderness and Backcountry Stewardship Planning process. The resulting plan addresses all 3.1 million acres of Congressionally-designated wilderness lands within Death Valley, and it is the first plan of its kind in the National Park Service to incorporate analysis and protection of wilderness character. Other park resources, such as wildlife, plants, and ecological systems were evaluated alongside the socio-economic impacts of plan actions on local communities. The Death Valley Wilderness and Backcountry Stewardship Plan was developed over four years, with four different opportunities for public input and literally hundreds of individual comments considered in the development of alternatives and the final selected action. The Timbisha Shoshone Tribe was consulted throughout the planning process, as were three cooperating agencies—Inyo County, CA; Nye County, NV; and Esmeralda County, NV. The completion of this effort represents regional, cooperative land-use planning at its best, and engaged communities to support the conservation goals and positive tourism-based economic benefits of ecosystem and wilderness protection. The park's Wilderness and Backcountry Stewardship Plan is a model for other park's to consider in managing backcountry and protected areas.

In 2013, the park finished a complete remodel of its 1960s-era Mission 66 National Park Service architecture Visitor Center, Auditorium, and Headquarters to be energy efficient and sustainable in the extreme-heat climate of Death Valley and is being considered for Gold LEED rating for the sustainable design and energy efficiency improvements of these structures.

Death Valley protects habitat important to migratory birds and bats. Bird breeding and nesting habitat is protected, especially important riparian and higher elevation areas. Projects involving disturbance of vegetation at these locations are restricted to occurring outside of this sensitive period in their life-cycle. Abandoned mines used as roost sites by migratory bats are protected through installation of bat-friendly closures, allowing for passage of bats but restricting human

entry. Migratory bats use abandoned mines as roosts for maternity sites, daytime and nighttime roosting, social activities, and during migration. Foraging sites over open shrub land and riparian areas are protected.

Death Valley National Park has developed a Standard Operating Procedure (SOP) for the decontamination of equipment/gear to be used in aquatic ecosystems. This SOP was designed to reduce/eliminate the chances of introducing invasive aquatic species into the park. Following the SOP guidelines is mandatory for all scientists conducting research in aquatic ecosystems within Death Valley National Park.

5. THE DEVELOPMENT FUNCTION:

[This refers to programmes that address sustainability issues at the individual livelihood and community levels, including economic trends in different sectors that drive the need to innovate and/or adapt, the main adaptive strategies being implemented within the biosphere reserve, and initiatives to develop certain sectors such as tourism to complement and/or compensate for losses in other markets, employment, and community well-being over the past ten years]

An important component of the economy in the BR is tourism. Several commercially provided interpretation opportunities have been developed in core areas, including the Borrego Jeep Photo Adventures (http://borregojeepphototours.com) and California Overland Desert Excursions (http://californiaoverland.com) inside the Anza-Borrego Desert State Park core area.Visitor centers in core areas and neighboring portal communities are present, along with food, lodging, art shops, museums, and more.

Displays in one of the Mojave and Colorado Deserts BR visitor centers.

5.1 Briefly describe the prevailing trends over the past decade in each main sector of the economic base of the biosphere reserve (e.g. agriculture and forest activities, renewable resources, non-renewable resources, manufacturing and construction, tourism and other service industries).

With so many different agencies involved in renewable energy development oversight and approval and such a high demand in California, state and federal agencies recognized the need for a comprehensive plan to guide development in appropriate areas while protecting sensitive resources. In 2008, the BLM, California Energy Commission, USFWS, and the Department began a collaborative effort to draft a Desert Renewable Energy Conservation Plan (DRECP) covering the Mojave and Colorado/Sonora desert region of California.

To date, renewable energy development in California has been permitted on a project-by-project basis. To facilitate this, the BLM has produced Programmatic Environmental Impact Statements (PEIS) for wind (BLM 2005), geothermal (BLM and USFS 2008), energy corridors (DOE and BLM 2008), and solar (BLM and DOE 2012).

During the last five years numerous solar energy projects have been proposed on Bureau of Land Management (BLM) administered lands throughout the California desert. The National Park Service works as a cooperating agency for these planning processes to help identify areas of high resource conflict—ecologically rich areas, important wildlife movement corridors, habitats rich in biodiversity—in order to help the BLM avoid siting industrial-scale energy projects in areas that would disrupt ecological systems on a regional scale. In this role, the National Park Service was actively involved in the development of the BLM's Solar Programmatic Environmental Impact Statement as a cooperating agency, providing resource information related to both Death Valley National Park and Joshua Tree National Park to help protect intact ecosystems while solar energy zones were designated throughout six states, including California. Currently, the National Park Service is serving as a cooperating agency in California BLM's Desert Renewable Energy Conservation Plan, which is attempting to establish conservation areas along with priority areas for energy development. The BLM has also been experiencing local pressure to sell some lands adjacent to Death Valley NP. The "disposal" of these lands will likely be accompanied by increased groundwater withdrawal from Death Valley's regional flow system. The National Park Service continues to be a cooperating agency in BLM planning processes that will ultimately determine the amount of land that will be targeted for disposal in these federal land tenure adjustments.

Transitional areas within the Mojave and Colorado Deserts BR supports one of the most renewable-energy rich locations in the United States and the world, with the potential to produce over 40,000 megaawatts of renewable energy (San Diego State University Sustainable Energy Center, unpubl. data). Recent events have positioned the Imperial County to surge in reneable energy production, bringing also economic, social, and educational development. The transition areas within this desert biosphere reserve are currently being planned to function as significant sources of renewable geothermal, wind, and solar energy production (http://energy.gov/eere/geothermal/imperial-valley-geothermal-area ; Figures 9 and 10).

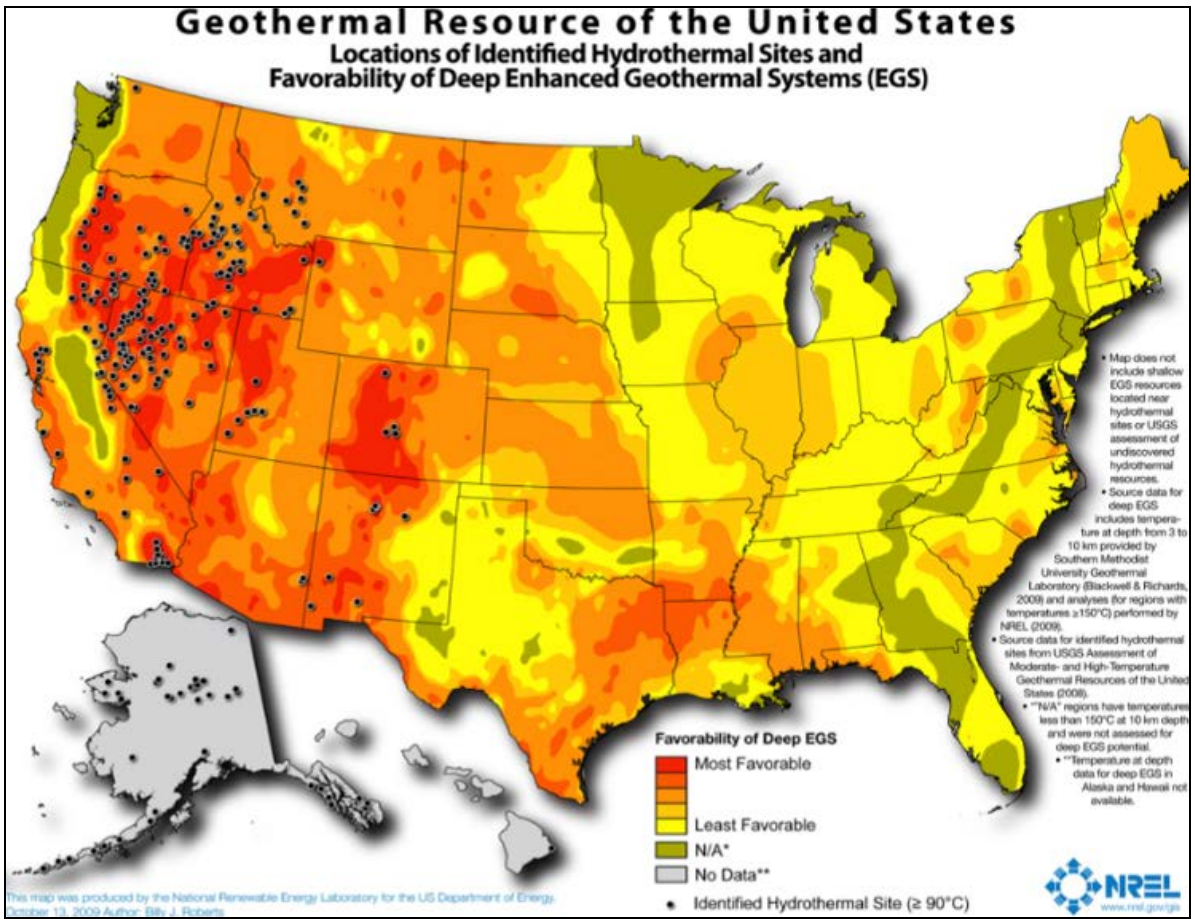


Figure 10. Geothermal resources of the United States. source: http://www.saltonseesense.com.

5.2 Describe the tourism industry in the biosphere reserve. Has tourism increased or decreased since nomination or the last periodic review? What new projects or initiatives have been undertaken? What types of tourism activities? What effect have these activities had on the economy, ecology and society of the biosphere reserve? Are there any studies that examine whether designation of the area as a biosphere reserve has influenced the number of tourists? Please provide the bibliographic information of any studies and/or a paper copy in an annex.

Recreational opportunities have increased within the core areas this past decade.

Death Valley National Park -- Visitation increased by about 20% since 2004. There are more visitors that use private contractors/guides to provide recreational experiences. These third parties are both from local areas or are part of a national company. International visitation has increased seasonally (summer) which has brought increased business to gateway communities as tour buses or individual vehicles travel to the park. The park is actively working on strengthening partnerships with local communities and Chambers of Commerce to provide information and promote activities within the park and surrounding communities. Research and construction associated with the Devils Hole pupfish has generated employment in the local economy. Businesses in Death Valley are the largest contributor to the county tourism tax base (based on hotel stays), and has increased steadily since 2000. Income brought in through park visitation is spent within the park on visitor-related projects. Approximately one dollar spent in investment accounts for four dollars in local spending.

Learn more at : https://www.nps.gov/subjects/socialscience/vse.htm

Joshua Tree National Park -- Annual visitation has increased incredibly in the last 20 years, from approximately 548,000 in 1980 to over 2.0 million in 2015, the park's busiest year. In that time, the park has transformed from a regionally recognized park to a destination frequented by visitors from across the world. On peak weekends in fall, winter and spring, it is not uncommon for the park's over 500 campsites to be filled to capacity. In fact, about half the annual visitation takes place between February and May. Although the park experiences a noticeable decline in visitors during the warmer months of June, July and August, summer visitors account for approximately 16 percent of all park visitors.

Learn more at : https://www.nps.gov/subjects/socialscience/vse.htm

Anza-Borrego Desert State Park -- An assessment of demograhics and patterns of use was completed as part of an Interpretation Master Plan prepared for this core area in 2015 (Figure 11). According to that plan:

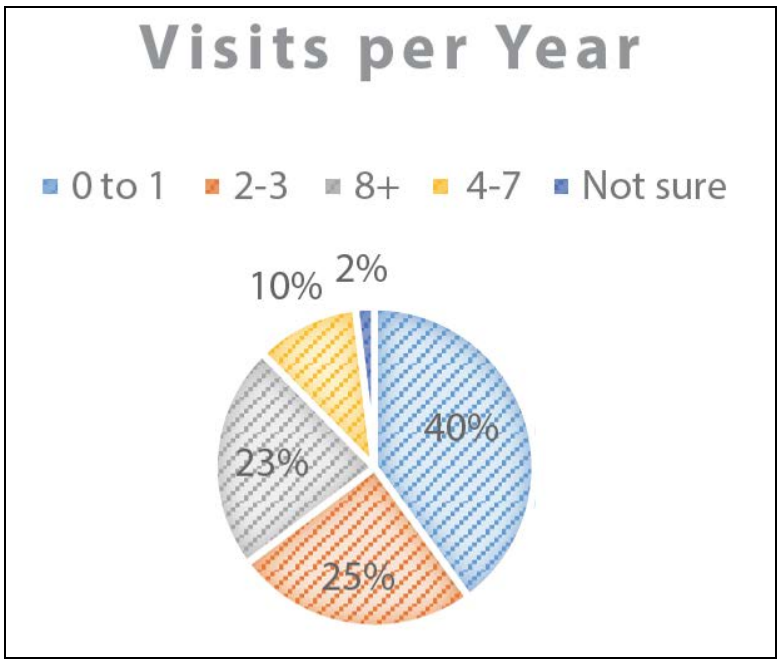
- This core area seems to be Southern California's "backyard" desert park, with 53% of visitors living within 120 miles of one of the Park's boundaries.

- The majority (64%) of participants were repeat visitors, with the largest group reporting one visit or less per year. Spring brings out the newcomers, attracting 50% more first-time visitors than does fall.

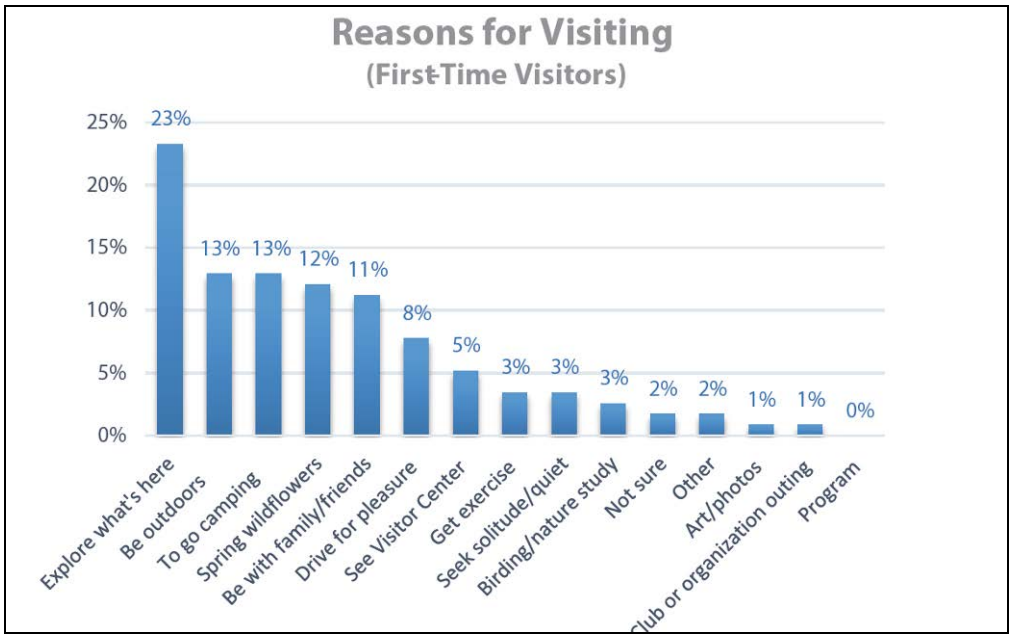
- A full 47% of respondents were day trip visitors; 35% expected to stay at the Park a half day or less. Another 28% had planned a one- or two-day visit, and 24% had planned three or more days. In post-survey conversations, many visitors mentioned that they were stopping by the Park en route to other destinations (Palm Springs, out of state, etc.).

- The Park attracts many older visitors. Seventy-two percent (72%) of participants were over 50, and the single largest group (33%) was 60–69.

Learn more at: http://www.parks.ca.gov/pages/638/files/Anza-Borrego_Final_9-25a.pdf



Number of visits per year that individual visitors partook at Anza-Borrego Desert State Park



Reasons for first-time visitors to visit Anza-Borrego Desert State Park.

Figure 11. Assessment of demographics and patterns of use in the Anza-Borrego Desert State Park core area in the Mojave and Colorado Deserts Biosphere Reserve, United States.

5.3 When applicable, describe other key sectors and uses such as agriculture, fishing, forestry. Have they increased or decreased since the nomination or the last periodic review? What kind of new projects or initiatives have been undertaken? What effect have they had on the economy and ecology of the biosphere reserve, and on its biodiversity? Are there any studies that examine whether designation as a biosphere reserve has influenced the frequency of its activities? If so, provide the bibliographic information of these studies and/or a paper copy in an annex.

The key sectors experiencing growth in the Mojave and Colorado Deserts BR are tourism and renewable energy developments. Both industries have increased since the last reporting period. Each sector places different needs on the ecology of the BR and long-term monitoring will be required to determine the positive and negative aspects associated with each industry. Renewable energy developments are converting buffer lands to transition and may be lost for conservation over the next 30-50 years, the projected life of many of the projects.

Economically viable agriculture occurs in transition areas at lower elevations where the climate and soils are much more favorable. Two large agricultural are present in the BR, the Imperial Valley and Coachella Valley agroecosystems (Figure 12). The California State Parks Salton Sea State Recreation Area lies between these two agroecosystems and is within the same parks district that the Anza-Borrego Desert State Park core area occurs, and thus the same natural resource group in that district manages resources in the Salton Sea State Recreation Area. Anza-Borrego Desert State Park resource managers thus does work with the agriculturalists and local water districts to reduce impacts of water salinity, contaminents, and air quality in the State Recreation Area, and are providing native desert vegetation seed stock to the Imperial Irrigation District for efforts to restore and stabilize shoreline playa soils and offset desertification.

Figure 12. Imperial and Coachella Valley Agroecosystems in the Mojave and Colorado Deserts BR

5.4 How do economic activities in the biosphere benefit local communities?

National Parks are world renowned iconic destinations and stimulate economic activities within the surrounding communities. Recently, the National Park Service released a report documenting and categorizing the economic activity generated by National Park units in the United States (Cullinane and Koontz 2016). The results of the report were based on spending and revenue generated by visitors of the NPS in 2015. An estimated $95 million dollars was spent by park visitors in gateway communities surrounding Death Valley National Park. Those expenditures are believed responsible for a total of 1300 jobs, $47.1 Million in labor income, $76.3 Million in value added, and $124.1 Million in economic gerneration (https://www.nps.gov/subjects/socialscience/vse.htm).

Similarly, Joshua Tree National Park saw more than 2 million visitors for the first time in the history of the park. The record visitation was responsible for an estimated $96.7 Million spent in local gateway regions while visiting the park. Money spent by park visitors supported a total of 1.3 Thousand jobs, $49.9 Million in labor income, $78.8 Million in value added, and $128.2 Million in economic output in local gateway economies surrounding Joshua Tree National Park.

Ecotourism and outdoor education are growing businesses in the Mojave Desert region. Death Valley and Joshua Tree National Parks issues hundreds of permits annually for tour groups focused on providing visitor information services. The National Park Service itself provides education programs to visitors and local communities and distance outreach to larger metropolitan area schools such as Los Angeles and Las Vegas. This reach will be extended exponentially with the development of a distance learning program. There have been initiatives that have not been fully engaged to promote sustainable development on the Timbisha-Shoshone Indian Tribal property within the park boundary. This may be revisited in the near future.

The town of Borrego Springs is a gateway community to the Anza-Borrego Desert State Park core area. Economic activities that benefit this community include food, lodging, commercial recreation and tour companies, and museums.

5.5 How do you assess the effectiveness of actions or strategies applied?
(Describe the methods, indicators).

Effectiveness is measured in retention of visitation levels, and documented economic viability assessments and environmental review processes by interested parties. Two examples associated with the Anza-Borrego Desert State Park core area are:

Economic Impact of Power-line Siting in Anza-Borrego Desert State Park was completed in 2015 by the Environmental and Natural Resource Economist Firm (http://www.borregowd.org/uploads/2015-02-03_Economic_Impact_of_Powerline_ABDSP.pdf),

California Outdoor Recreation Economic Study: State Park System Contributions and Benefits by BBC Research and Consulting (https://www.parks.ca.gov/pages/795/files/ca%20outdoor%20rec%20econ%20study-state%20park%20system%2011-10-11%20for%20posting.pdf).

The effectiveness of the National Park units at generating local and regional economic benefits is modeled by NPS social scientists and can be visualized at https://www.nps.gov/subjects/socialscience/vse.htm.

5.6 Community economic development initiatives. What programmes exist to promote comprehensive strategies for economic innovation, change, and adaptation within the biosphere reserve, and to what extent are they implemented?

The economy within the vicinities of the core areas is fundamentally recreation and tourism, and development initiatives are primarily related to those functions. Core area authorities are not heavily engaged in economic development initiatives in buffer and transition areas, where local economies can differ widely, and initiatives range from federal and local renewable energy (wind and solar) incentives, federal agricultural subsidies, and local community business revitalization projects, to county-level land zoning for commercial development. One example is the Desert Renewable Energy Conservation Plan, which is a renewable energy planning effort to provide effective protection and conservation of desert ecosystems while allowing for an acceptable level of renewable energy project development.

5.7 Local business or other economic development initiatives. Are there specific "green" alternatives being undertaken to address sustainability issues? What relationships (if any) are there among these different activities?

Several green alternatives are being undertaken to address sustainability issues throughout the BR. In addition to renewable energy such as wind and solar, several local business models have emerged with success. Some examples from the Anza-Borrego Desert State Park region that are representative of the larger BR include :

- Destination Borrego – David Garmon (tubb canyon conservancy)
- Dark sky initiative – sally theriualt
- Groundwater sustainability program (state mandated) comprised of Borrego water dist and san diego county – Kathy dice
- Borrego water coalition – Kathy dice
- Desert Renewable Energy Conservation Plan
- Geothermal Development in Imperial County

5.8 Describe the main changes (if there are any) in terms of cultural values (religious, historical, political, social, ethnological) and others, if possible with distinction between material and intangible heritage.
(c.f. UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage 1972 and UNESCO Convention for the Safeguard of the Intangible Cultural Heritage 2003 (http://portal.unesco.org/en/ev.php-URL_ID=13055&URL_DO=DO_TOPIC&URL_SECTION=201.html and http://portal.unesco.org/en/ev.php-URL_ID=17716&URL_DO=DO_TOPIC&URL_SECTION=201.html)).

There have not been significant changes in cultural values.

5.9 Community support facilities and services. What programmes in/for the biosphere reserve address issues such as job preparation and skills training, health and social services, and social justice questions. What are the relationships among them and with community economic development?

The park collaborates with many partners, both formally and informally. Formal partnerships bring additional monetary resources into the park to implement specific projects or programs.

The park works with other community groups or individuals to provide information on a regional level to visitors and residents.

Death Valley National Park's environmental planning processes invite stakeholders such as the Timbisha Shoshone Indian Tribe and 4 county governments in two U.S. States to participate as cooperating agencies, contributing traditional knowledge, special expertise, and diverse local perspectives to Death Valley's land-use plans covering 3.37 million acres of the biosphere reserve.

Local governments and scientists are working together to comply with environment laws and better define appropriate types and levels of development. Death Valley National Park works closely with conservation groups such as the Amargosa and Nature Conservancy to protect life-sustaining water resources. The park is always a cooperating agency on Bureau of Land Management projects that may pose cross-boundary impacts, and the park has been supported by the Bureau of Land Management and United States Fish and Wildlife Service in their protests of water rights applications that threaten park resources.

Geophysical, cultural, and political boundaries challenge relations with partner and special interest groups. These challenges are addressed through regular communications, public meetings, and planning sessions with partners and intergovernmental (private, State, and Federal levels) relations and capacity building.

Death Valley is a remote park and travel to and from can be challenging. Additionally, its extreme summer temperatures prohibit some functions from taking place in the warmer months (May-Sept.) in the park's lower elevations. However, success has been realized by bringing youth groups into the park that have not been visitors to national parks in the past. A challenge is providing full time supervision from staff, as well as continuation with a more formal education program due to loss of funding for permanent staff for these programs. Despite these challenges, Death Valley is exploring direct hiring authorities for applicants who live within the local communities.

5.10 What indicators are in place to assess the effectiveness of activities aiming to foster sustainable development? What have these indicators shown?

Unknown at this time.

5.11 What are the main factors that influenced (positively or negatively) the success of development efforts in the entire biosphere reserve? Given the experiences and lessons learned in the past ten years, what new strategies or approaches will be most effective?

The state of local, state, and federal economies can generally underpin the volume of development projects in the BR. Approaches to increase the success of development can orginate from national and state-level initiatives to alleviate dependence on fossil fuels. The U.S. President's Climate Action Plan contains a goal of doubling renewable energy generation by wind, solar, and geothermal sources between 2012 and 2020 (http://energy.gov/sites/prod/files/2014/04/f14/2014_dept_energy_strategic_plan.pdf). This goal also recognizes that diverse energy mix will provide multiple development and employment opportunities to local communities. California goals for renewable energy require 30% energy produced by rewable methods by 2020, 40% by 2024, 45% by 2027, and 50% by 2030 (http://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx), with a 2013

amendment allowing the California Public Utilities Commission to adopt additional requirements anticipated to fuel development in renewable energy.

6. THE LOGISTIC FUNCTION:

[This refers to programs that enhance the capacity of people and organizations in the biosphere reserve to address both conservation and development issues for sustainable development as well as research, monitoring, demonstration projects and education needed to deal with the specific context and conditions of the biosphere reserve.]

6.1 Describe the main institutions conducting research or monitoring in the biosphere reserve, and their programmes. Comment on organizational changes (if any) in these institutions over the past ten years as they relate to their work in the biosphere reserve.

Across the core areas, hundreds of universities have conducted research and monitoring activities.

Joshua Tree National Park -- The University of California and California State University system academic institutions are particularly active in working on projects in Joshua Tree National Park. The Smithsonian Institution is cooperating with the park to inventory and describe the park's numerous insect species. Natural resource projects on plants and animals dominate the research being done in the park however, permits have been issued to museums and other entities to do investigations on subjects like Petrology, Paleontology and Archaeology. Further research has been completed on subjects like visitor use patterns by the University of Idaho and the NPS' Mather Training Center.

Anza-Borrego Desert State Park -- University of California, Irvine Research Center serves to conduct research in the Anza-Borrego Desert State Park core area. This center hosts a biennial science conference that is open to the public and attended by hundreds from with the Mojave and Colorado Deserts BR. We also have an extensive of research and monitoring within the Anza-Borrego Desert State Park core area by researchers from various academic research institutions across the United States on topics ranging from climate change to invertebrate systematics, producing over 270 publications.

California State Parks Inventory, Monitoring, and Assessment Program (IMAP) provides goals, guidance, and standards for the Department's efforts to systematically evaluate the vegetation, wildlife, and physical natural resources of the State Park System. Evaluations consist of collecting data through various scientific means in each State Park System unit. Data is generally quantitative and consists of counts and measures of natural resources. The IMAP support team, located at Natural Resources Division in Sacramento and Service Centers statewide, is composed of professional biologists and technical experts who are responsible for:

- Assisting park staff in the selection of study methods, development of study designs, and collection of natural resource data in state parks
- Working closely with universities and state and federal agencies to coordinate collection of natural resources data
- Developing databases and geographic information systems for assessment of park natural resources data; and
- Providing assistance

6.2 Summarize the main themes of research and monitoring undertaken over the past ten years and the area(s) in which they were undertaken in order to address specific

questions related to biosphere reserve management and for the implementation of the management plan (please refer to variables in Annex I).
(For each specific topic provide reference citations. Provide the full citations alphabetically by lead author at the end of Section 6 or in a separate annex).

A broad spectrum of research, inventory, and monitoring themes have been undertaken over the past 10 years in the Mojave and Colorado Deserts BR. Juxtaposed in the two desert ecoregions, the core areas enjoy similar, but somewhat different, research and monitoring needs. As described under section L of Part 1: Summary, both the National Park Service and California State Parks have inventory and monitoring programs that are in various stages of developing and implementing long-term monitoring. The following summarizes the main themes of research and monitoring in each core area.

Anza-Borrego Desert State Park -- The Steele/Burnand Anza-Borrego Desert Research Center (2011) was established within the Anza-Borrego Desert State Park core area in partnership with the University of California, Irvine, University of California Natural Reserve System, Anza Borrego Foundation, and that core area. This partnership led to numerous research efforts that produced peer-reviewed papers, reports, and graduate theses during the periodic review period (272 articles; Figure 13), and over 7 research symposiums and lecture series hosted by Anza-Borrego Desert State Park and its partners. Each year, roughly 15 permits to conduct research in Anza-Borrego Desert State Park are issued; topics include weather and climate, soils and water, botany, and vertebrate and invertebrate ecology and systematics. Some research also focuses on applied management questions. Three research grant opportunities have been developed to provide funding to cover logistical support in the Anza-Borrego Desert State Park core area; the Howie Wier Memorial Conservation Grant (2004) with the Anza Borrego Foundation, Begole Archaeological Research Grants Program (2006), and Paul D. Jorgensen Memorial Bird Grant (2014) with the Anza-Borrego Foundation.

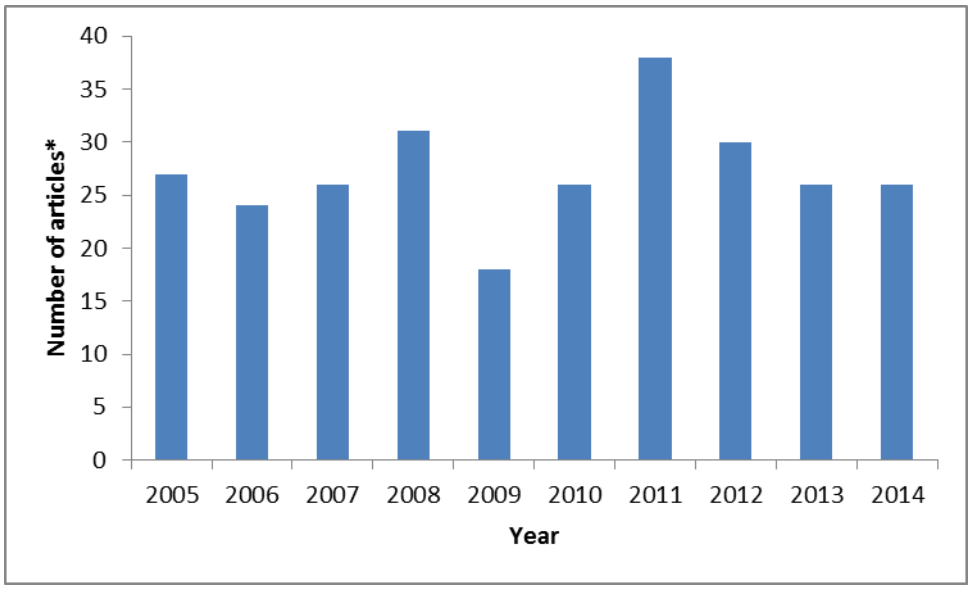


Figure 13. Number of articles (peer reviewed, reports, graduate theses).

Joshua Tree National Park -- Since January 2000, over 450 research permits have been issued from Joshua Tree National Park to a wide array of institutions to complete research projects in the park. The University of California and the California State Universities are particularly active in working on projects in this core area, and the Smithsonian Institution is cooperating with the park to inventory and describe its insect fauna. Natural resource projects on plants and animals dominate the research being done in the park, however permits have been issued to

museums and other entities to do investigations on various subjects, such as Petrology, Paleontology and Archaeology. Further research has been completed on subjects like visitor use patterns by the University of Idaho and the NPS' Mather Training Center.

Through a variety of methods, Death Valley National Park encourages scientific research and education focused on environmental education. The National Park Service coordinates the Research Permit and Reporting System for all parks with academic research activities http://science.nature.nps.gov/research. Between 2004-2014 Death Valley Issued 304 research and collection permits. Death Valley National Park coordinates its academic research activities through this program. Information from this program is linked directly to professional academic institutions, is part of academic publications and conferences, and feeds the information flow within the park to the visiting public.

Death Valley National Park -- Encourages sound scientific research; for terrestrial vertebrates many research projects include sampling within the boundary of the park and are part of a larger effort that extends beyond park boundaries. Research is reviewed and tracked through a research permit system. Researchers in this core area are comprised of park staff, students, university staff and scientists, and staff from other agencies. In 2011, this core area implemented the Long Term Ecosystem Monitoring Plan for Devils Hole, an aquatic ecosystem that is the only habitat for the critically endangered Devils Hole pupfish. Park staff also initiated specific research projects in collaboration with academic institutions that examined ecosystem function, community structure, and population dynamics of Devils Hole and the Devils Hole pupfish.

Records relating to the results from many of these studies are available from the park as well as the IRMA webpage https://irma.nps.gov/App/Portal.

6.3 Describe how traditional and local knowledge and knowledge from relating to management practices have been collected, synthesized and disseminated. Explain how such knowledge is being applied to new management practices, and how and if it has been integrated into training and educational programmes.

Please see section 7.3 for a detailed explanation of how we address this issue.

6.4 Environmental/sustainability education. Which are the main educational institutions ("formal" – schools, colleges, universities, and "informal" services for the general public) that are active in the biosphere reserve? Describe their programmes, including special school or adult education programmes, as these contribute towards the functions of the biosphere reserve. Comment on organizational changes (if any) in institutions and programmes that were identified in the biosphere reserve ten or so years ago (e.g. closed down, redesigned, new initiatives). Refer to programmes and initiatives of UNESCO Associated Schools networks, UNESCO Chairs and Centers where applicable.

We practice two general forms of education:

Informal Interpretation – consists of spontaneous interpretive contacts with visitors within park core areas. These contacts may occur in a variety of settings, such as historic structures, natural features, archaeological sites, etc. These spontaneous encounters can be stationary or through roving interpretation.

Formal Interpretation – all on-site pre-planned presentations that have goals, themes, and objectives with desired measurable outcomes. These are designed to provoke visitors to form their own intellectual or emotional connections with the significance of the park resource. These programs are advertised, scheduled, or announced prior to being presented.

Specific examples of educational institutions and programs are:

- Camp Borrego in partnership with Anza-Borrego Foundation, San Diego County Department of Education, and the Desert Protective Council (2004-2016)
- PORTS (Parks Online Resources for Teachers and Students) Program (2005 – 2016)
- Junior Ranger Program
- 3rd Grade Ranger-Ride-Along Program
- The Cedar Fire and Cuyamaca Rancho State Park One Year Later: Recovery Expectations and Realities (October 16-17, 2004)
- Fossil Treasures of Anza-Borrego Desert: A Symposium Exploring North America's Richest Continuous Fossil Record of the Last Seven Million Years (November 19-20, 2005)
- 2012 Sonoran Desert Conservation, Ecology and Natural History Symposium (November 2-4, 2012)
- 2013 Colorado Desert Cultural Heritage Symposium (November 1-3, 2013)
- 2014 Colorado Desert Natural History Research Symposium (November 7-9, 2014)
- 2015 Colorado Desert Cultural Heritage Symposium (December 4-6, 2015)
- 2016 Colorado Desert Natural History Research Symposium (November 4-6, 2016)
- *Anza-Borrego: In Focus* educational lecture series (October 2015 – April 2016)

6.5 How do you assess the effectiveness of actions or strategies applied?
(Describe the methods, indicators).

Effectiveness is measured qualitatively and in real time. Interactions with individuals and groups ahve a discussion at the end of their time together to gauge effectiveness. Periodic reviews of overall program occurs annually, and is qualitative, providing opporunity for adjustments to be made.

6.5.1 Describe the biosphere reserve's main internal and external communication mechanisms/systems

This new group of core area authorities is rapidly learning how to move through and consolidate differences in communication mechanisms/systems between the federal and state governments. We continue to develop internal and external communication methods that are providing to be comprehensive and include:

An emerging social media program that now includes google+ (https://plus.google.com/100030563856161085682) and a website (https://www.parks.ca.gov/?page_id=29306).

- Information offices staffed largely by volunteers to provide immediate customer service.
- Public information offices that actively engage internally with staff and externally with public media sources.
- Coordinated and spontaneous meetings among partners, as well as informal telephone calls and conferences, and emails.

Each core area communicates regularly using a variety of methods. Face-to-face meetings with gateway communities and stakeholders are employed along with electronic and print communications. All of the MCDBR units have websites that convey a large amount of information about the specific area and its history, culture and biodiversity.

Death Valley NP's communication strategies include primarily electronic, print, and visual media. News releases are sent to primary media and political contacts to inform recipients of park events or management decisions. Interpretive Ranger programs are given daily in various locations. Staff makes visitor contact at the central Visitor Center front desk, at two secondary sites, as well as informally throughout the park while on patrol. The park film, "Seeing Death Valley", is seen by most park visitors. The park has just completed over $2.5 million worth of interior and exterior exhibits communicating both the natural and cultural history of Death Valley and the region. The park is always looking for new ways to reach visitors, and plans to increase the production of short video segments for message distribution. The park has an active social media presence, and disseminates information via Facebook, Twitter, Flikr, and YouTube. The website address is https://www.nps.gov/deva/ .

Joshua Tree National Park uses a variety of methods to communicate to local, national, and international visitors. The park's website is located at www.nps.gov/jotr and Facebook page at https://www.facebook.com/joshuatreenp and the park can be followed on twitter at @JoshuaTreeNP. The park's Social Media Policy is directed at increasing visitation virtually as well as physically in an effort to further appreciation for park resources. Within the past year, the park has increased its social media postings and has the 10th most visited Facebook site in the National Park Service. The park also posts news releases on the park's website and with Southern California media outlets. In the local area, we participate and do public service announcements regularly through the radio stations surrounding the park. The park has an on-staff External Affairs Officer who is tasked with going out into the communities and sharing not just park information, but ways our neighbors can become immersed in park resources.

6.5.2 Is there a biosphere reserve website? If so, provide the link.

As the new Mojave and Colorado Deserts BR authorities learn about and moved through this review process, we developed a temporary website for this BR while we move towards developing a perment one.

https://www.parks.ca.gov/?page_id=29306

6.5.3 Is there an electronic newsletter? How often is it published? (provide the link, if applicable).

Not at this time.

6.5.4 Does the biosphere reserve belong to a social network (Facebook, Twitter, etc.)? Provide the contact.

Yes, https://plus.google.com/100030563856161085682

The National Park core areas also have following park-specific web materials:

- www.nps.gov/deva/
- https:www.facebook.com/DeathValleyNP?rf=121003521308878
- @DeathValleyNPS
- http://www.youtube.com/user/deathvalleynp
- http://www.flickr.com/photos/deathvalleynp/
- www.nps.gov/jotr
- https://www.facebook.com/joshuatreenp
- @JoshuaTreeNP

6.5.5 Are there any other internal communication systems? If so, describe them.

Not at this time.

6.6 Describe how the biosphere reserve currently contributes to the World Network of Biosphere Reserves and/or could do so in the future.

6.6.1 Describe any collaboration with existing biosphere reserves at national, regional, and international levels, also within regional and bilateral agreements.

The Anza-Borrego Desert State Park core area has been contacted directly by and provided assistance to the Visciano Desert Biosphere Reserve in Baja California, Mexico to help them figure out how to apply for designation. Several other Biosphere Reserves have also contacted this core area to receive technical assistance regarding the removal of invasive saltcedar and bighorn sheep management.

Anza Borrego, in cooperation with Anza-Borrego Foundation, Denver Zoo Foundation, Mongolian Academy of Sciences, and United Nations Development Program Special Protected Area Network, this group also is engaged in international conservation through developing a "Sister Park" relationship with Ikh Nartiin Chuluu Nature Reserve in Mongolia.

Joshua Tree National Park is developing interpretive planning efforts with Death Valley National Park, but it is still in the initial stages. Some activities involving reserves within the Mojave are being discussed and implemented in an educational setting through participation in the Mojave Interpreters Network.

In the spring of 2013 Death Valley National Park hosted a delegation from Mongolia to exchange management perspectives and strategies for the long-term protection of desert parks and biosphere reserves such as the Great Gobi National Park and biosphere reserve and Death Valley National Park. The Mongolian delegation included two high-level officials – State Secretary of the Ministry of Environment and Green Development Jamsran Batbold and Senior Officer in the Department of Protected Areas Management Avirmed Dolgormaa. They chose Death Valley because of the biosphere reserve status, the park's interwoven mining and conservation history, its ongoing work with the Bureau of Land Management in two states to accomplish regional landscape-level conservation planning, and the park's extensive and unique desert ecosystem.

6.6.2 What are the current and expected benefits of international cooperation for the biosphere reserve?

Current and expected benefits of international Cooperation are the exchange of knowledge and expertise in similar environments around the world. It is expected that a supportive relationship will be formed and that the benefits will flow both directions.

6.6.3 How do you intend to contribute to the World Network of Biosphere Reserves in the future and to the Regional and Thematic Networks?

Currently, we can provide expertise and a leadership function in areas of biological, paleontological, and archaeological research, management, conservation, and education. In addition to section 6.6.1, there are additional opportunities to create alliances among other reserves to highlight conservation and sustainable development. Using our model of developing relationships with parks in Mongolia, the Mojave and Colorado Deserts BR core areas are poised to build relationships with other BRs internationally to further share expertise and improve a joint understanding of external communication and consevation that transcends cultures and continents.

6.7 What are the main factors that influenced (positively or negatively) the success of activities contributing to the logistic support function? Given the experiences and lessons learned in the past ten years, what new strategies or approaches will be favored as being most effective?

Logistic support-facilitate local demonstration projects, environmental education and training, and research and monitoring related to local, regional, and global opportunities for conservation and sustainable development.

Besides adequate funding and excellent communications, one factor is forming successful partnerships and collaborations with common goals. For example, Anza-Borrego Desert State Park worked with the Anza-Borrego Foundation and Univeisty of California Irvine faciliate a land acquisition programm research and monitoring, and an environmental education component to interpretation. And they combine resources and cost-sharing opportunities to achieve '*the impossible*.'

Another factor that influences success is funding for invasive species monitoring and removal for the conservation of protected species. For example, the Anza-Borrego Desert State Park core area granted a renewable energy company constructing solar energy sites in the biosphere reserve's buffer habitat access into the core area to restore native desert drywash habitat through the removal of the invasive tamarisk plant.

6.8 Other comments/observations from a biosphere reserve perspective.

In this report we have listed several active and long running partnerships that our National and State Park core area units have entered into in the context of our Park work. Although our work is in line with Biosphere functions, the partnerships have not been entered into in the context of the existing Biosphere. For the purpose of the Biosphere, we aim to continue working with our partners and to engage them with the Biosphere objectives and messaging into the future.

7. GOVERNANCE, BIOSPHERE RESERVE MANAGEMENT AND COORDINATION:

[Biosphere reserve coordination/management coordinators/managers have to work within extensive overlays of government bodies, business enterprises, and a "civil society" mix of non-governmental organizations and community groups. These collectively constitute the structures of governance for the area of the biosphere reserve. Success in carrying out the functions of a biosphere reserve can be crucially

dependent upon the collaborative arrangements that evolve with these organizations and actors. Key roles for those responsible for the biosphere reserve coordination/management are to learn about the governance system they must work within and to explore ways to enhance its collective capacities for fulfilling the functions of the biosphere reserve.]

Public participation in the dicision process is the cornerstone of successful management – and it's the law!

7.1 What are the technical and logistical resources for the coordination of the biosphere reserve?

There are different interest groups in the Managed Use Areas of the reserve, also known as the buffer areas, including military bases, other public land management agencies, the non-profit associations associated with each core unit, a diversity of concessions (businesses) and inholders (private residences). Within the Areas of Partnership and Cooperation there are businesses, towns, farms, local and county governments, universities and residents. Depending on the issue, they managed use and areas of partnership may overlap. In this document we provide a general overview of what the different zones might look like and discuss specific examples of partnership and sustainable development within a MAB Context.

For the better and more effective development, there are a number of coordination institutions/mechanisms to provide technical and logistical support.

- For the technical coordination, under the premise of giving priority to protection, in the framework of authorities provided by the U.S. Congress, laws, regulations, programs and policies, there are public processes legally expected by each Authority to coordinate and solve major issues in the principle of mutual benefit to stakeholders. Within the Mojave and Colorado Deserts BR we are coordinating at a high level across the entire reserve through the Desert Mangers Group (DMG).

Learn more at: www.dmg.gov/

- For logistical resources, there are many including: Government agencies, a learning center, universities, volunteers, talent pool, financial security, corporate environmental protection management organization, community volunteers, environmental associations in community groups such as the Wilderness Society and the National Parks Conservation Association.

7.2 What is the overall framework for governance in the area of the biosphere reserve? Identify the main components and their contributions to the biosphere reserve.

The Mojave and Colorado Deserts BR was designated a Biosphere Reserve in 1984 as first generation Biosphere Reserve. As such, the framework for governance of the reserve's core areas has mostly been independent of one another. During the 2016 Periodic Review of the UNESCO MAB program, it came to our attention that the zonation requirements per the policies of the MAB program, how they have been applied at our site, and as currently interpreted more than 30 years after the designation, are no longer in alignment. This Periodic Review submission is our very best attempt to reconcile this disparity.

We have modified our representation of the Biosphere Reserve form and functions as provided for in the Statutory Framework, Article 4 Section 5 where the emphasis is on "…functions, through *appropriate* zonation…"

We further defined functions, through *appropriate* zonation per Article 2 Section 3 of the Statutory Framework, which specifies "individual biosphere reserves remain under the sovereign jurisdiction of the States where they are situated. Under the present Statutory Framework, States take the measures which *they deem necessary* according to their national legislation."

Per the United States Congress and the laws and policies that govern US soil, there is a specific expectation of sovereignty such that individual private property rights, and those authorities of states and the federal government, remain with such authority and independence that the primary legal way in which to implement the Biosphere Reserve concept is through *agreements.* It is **this first key concept** which is '*deemed necessary'* to address zonation and in the Mojave and Colorado Deserts BR case, provide for our Areas of Partnership and Collaboration, also known as a Biosphere Reserve's transition area.

Furthermore, *voluntary agreements can not legally abdicate authority to a different management authority or to a collaborative decision body, such as a Biosphere Reserve governing board* – each member of the agreement retains its respective authority. Thus, agreements serve to formalize the issues or topics in common to each institution on which they wish to partner, so they may collaborate and share resources across boundaries. This biosphere reserve maintains hundreds of such agreements.

These facts may confuse many outside the United States who may be familiar with landscape initiatives such as: Desert Managers Group, Landscape Conservation Collaboratives; National Park Service Inventory and Monitoring Networks, etc. These groups reflect agreements to encourage voluntary coordination and collaboration, akin to the aforementioned legal structure, and in no way represents an authoritative governance structure for that region or yields individual sovereignty.

The **second key concept** relates to actually effectively managing in a sustainable way by addressing issues at the *appropriate scale*. Per Article 4, section 5c of the Statutory Framework the BR should include "an outer transition area where sustainable resource management practices are promoted and developed." To this end, the reality of *actually managing* in a sustainable way demands working at different scales for different issues. For example, at an *extreme large scale* we work with Central America on migratory species; at *a moderate scale* we work closely with agriculturalists throughout southern California to implement best management practices to improve air quality; and at an *extreme small scale* we work exclusively within our gateway communities to restore biological diversity. Therefore, we identify a scaled approach to the management of this reserve. Additinally, ~80% of the reserve is managed by public agencies, such as State and National Parks, the Bureau of Land Management, the U.S. Forest Servies, and several military bases. Our conversations of transition areas are used to to address different sustainability issues and general land management to entities with adjacent boundaries to our core areas and may vary depending on the issue such as the push to convert large areas of this reserve to renewable energy developments.

In conclusion, Biosphere Reserves within the United States will have at least two key components to zonation: 1. An area (or zone) that has an explicit legal authority provided for in law and 2. Agreements which are the legal instruments that connect authorities in a common cause. Finally, agreements most often are developed around *issues in common* and can be focused on one issue of collaboration, or many, depending upon interests and capacities of the organizations involved. The rationale presented above is summarized in the table below.

Criteria Summary and Framework for Mojave and Colorado Deserts Biosphere Reserve

Statutory Framework Article 4 Criterion number 5	**Criteria from 2015 Rocky Mountain BR Periodic Review (Approved at the 28th session of the MAB-ICC in March 2016)**	**Source of LEGAL AUTHORITY***	Mojave and Colorado Deserts **Biosphere Reserve Authorities**
(a) a legally constituted core area or areas devoted to long-term protection, according to the biosphere reserve, and of sufficient size to meet these objectives	one or more securely **"Protected Areas"** such as wilderness areas or research natural areas, for conservation and monitoring of minimally disturbed ecosystems;	A park's enabling legislation or special designation as provided for by California Law, Congress or as directed in National Park Service Management Policies 2006	**Anza Borrego Desert State Park** – California Public Resource Code 5019.74 and pp3-6 of the ABDSP 2005 General Plan. **Death Valley National Park** - Presidential Proclamation No.2028, February 11, 1933, establishment of Death Valley National Monument; California Desert Protection Act, October 31, 1994 (Public Law 103-433, Sec. 21), establishment of Death Valley National Park and designation of Death Valley Wilderness; The Timbisha Shoshone Homeland Act, November 1, 2000 (Public Law 106-423 Sec. 2102), establishment of nonexclusive special use areas for the Timbisha Shoshone Tribe **Joshua Tree National Park** - Proclamation (No. 2193) of August 10, 1936 (additional Laws and Policies pp28-33 Appendix A of Foundation Document. **Santa Rosa San Jacinto National Monument** - The Santa Rosa and San Jacinto Mountains National Monument Act of 2000 (Public Law 106-351)
(b) a buffer zone or zones clearly identified and surrounding or contiguous to the core area or areas, where only activities compatible with the conservation objectives can take place;	**"Managed Use Areas"** surrounding the protected areas, where research, educational activities, public recreation, and various economic activities occur according to ecological principles;	A park's enabling legislation or special designation as provided for by California Law, Congress or as directed in National Park Service Management Policies 2006	**Anza Borrego Desert State Park** – California Public Resource Code 5019.74 and pp3-6 of the ABDSP 2005 General Plan. **Death Valley National Park** - Presidential Proclamation No.2028, February 11, 1933, establishment of Death Valley National Monument; California Desert Protection Act, October 31, 1994 (Public Law 103-433, Sec. 21), establishment of Death Valley National Park and designation of Death Valley Wilderness; The Timbisha Shoshone Homeland Act, November 1, 2000 (Public Law 106-423 Sec. 2102), establishment of nonexclusive special use areas for the Timbisha Shoshone Tribe **Joshua Tree National Park** - Proclamation (No. 2193) of August 10, 1936 (additional Laws and Policies pp28-33 Appendix A of Foundation Document. **Santa Rosa San Jacinto National Monument** - The Santa Rosa and San Jacinto Mountains National Monument Act of 2000 (Public Law 106-351)
(c) an outer transition area where sustainable resource management practices are promoted and developed	**"Areas of Partnership & Cooperation"** are issue-driven partnerships or agreements, informed by science, to achieve a management outcome to protect the biosphere reserve (BR). A BR can have more than one issue-driven partnership that reflects the need such as air quality, migratory species, water quality, etc. The area of cooperation will likely be within a parks Inventory and Monitoring Network footprint (Omnibus Management Act 1998), its Cooperative Ecosystem Studies Unit Footprint (Omnibus Management Act 1998), or the Department of Interiors Landscape Conservation Cooperative footprint (Dept. of Interior Secretary Order 3289).	United States Code Title 54 has the work outside park authority for both Partnership & Cooperation. Bill Text: https://www.congress.gov/113/bills/hr1068/BILLS-113hr1068rfs.pdf	The Mojave and Colorado Deserts BR Core area is comprised for four separate units, each with its own mission, staff and oversight. Collectively we collaborate with each other, but enter into unique agreements to solve management challenges at multiple scales. In this document we highlight several agreements that span eco-regional and watershed to the very local level of protecting community values in the three communities on the northern boundary of Joshua Tree National Park. Agreements at the legal mechanisms by which our Core units can work beyond our administrative boundaries and enter into agreements and partnerships, thus expanding the influence of the MAB and the ideas of sustainable development. Collectively, we maintain hundreds of agreements.

***per ARTICLE 2 number 3 of the MAB Statutory Framework - Individual biosphere reserves remain under the sovereign jurisdiction of the States where they are situated. Under the present Statutory Framework, States take the measures which they deem necessary according to their national legislation. The legal authorities described are the clear legal mandates provided for by the United States Congress AND best meet the expectations of both the form and especially the function outlined in the UNESCO MAB Statutory Framework. Additionally, the Areas of Partnership & Cooperation will be formed as described and with the appropriate legal instrument with partners. Each area partnership will form a unique transition area where sustainable resource management practices are collaboratively identified, developed, studied and implemented. Collectively a diversity of partnerships will overlap adding value to each other and strengthening the protection of the BR while providing for sustainable development.**

7.3 Describe social impact assessments or similar tools and guidelines used to support indigenous and local rights and cultural initiatives (e.g. CBD Akwé:Kon guidelines, Free, Prior, and Informed Consent Programme/policy, access and benefit sharing institutional arrangements, etc.).

Fundamental to addressing issues in the BR is the consultation with indigenous tribes that once lived on these lands. Tribes now have soverign nations and our communications are first government to government. Over the years, we have built relationships with the local tribes, and can engage on numerous topics.

The Constitution of the United States distributes rightrs and duties to the United States andto the individual states. The individual states distribute rights and duties to local governments. The U.S. and individual state constitutions, laws, and regulations, as well as local laws and regulations together establish the legal framework within which citizens conduct their lives. American Indians ar citizens of the United States and may also be members of federally-recognized sovereign tribal nations within the United States. Such sovereign nations may establish their own laws and regulations. Federal, state, and local governments may establish specific working relationships with tribal governments. Access and benefits-sharing relationships lie within the framework of laws and regulations rather than existing separately from that framework.

The National Environmental Policy Act (NEPA) was passed by the U.S. Congress in 1969, and established a national policy of encouraging productive and enjoyable harmony between human beings and the environment for present and future generations (See section 2.3.1 for details about NEPA and its associated process). Additionally, the stated purposes of NEPA include:

1. Declaring a national policy wihich will encourage productive and enjoyable harmony between man and his environment,
2. Promoting effortrs which will prevent or eliminate damage to the environment and ***biosphere*** and stimulate the health and welfare of man,
3. Enriching the understanding of the ecological systems and natural resources important to the Nation, and
4. Establishing the Council of Environmental Quality (CEQ).

Public involvement is a key component of the NEPA process. The CEQ regulations require agencies, such as the National Park Service, to “encourage and facilitate public involvement”to the fullest extent possible in making decision that would have environmental impacts and to make diligent efforts to involve the public in the NEPA process. Thus, the NEPA process is an effective tool provides indigenous peoples the right to engage and provide comments on federal actions taken within the BR.

As part of the NEPA process, the Death Valley and Joshua Tree National Park core areas work with numerous Native American Tribes, and through California state regulations and laws, the Anza-Borrego Desert State Park core area works works closely with Native American Tribes (please see section 2.3.6 for additional information).

7.4 What (if any) are the main conflicts relating to the biosphere reserve and what solutions have been implemented?

The shere size of the BR core areas and diversity of resources is an interpretive challenge that is best addressed via a hierarchy of messages. If visitors leave with only a single message, it

should relate to the vast size and character of the individual park core areas. While elucidating information specific to a given core area, this does not introduce insights into its geographic position, relative contribution, or joint participation in conservation and education activities at the broader scale of the BR. More specific stories of “change,” “diversity,” and “inspiration” are being incorporated into interpretive talks presented to park visitors in order to link this unifying theme across scales to the broader BR.

To characterize conflicts and various solutions adopted in the BR, we present examples of challenges regarding visitors and resources from the Anza-Borrego Desert State Park core area.

- Given the importance and widespread evidence of human use and occupation of lands within core area, interpretation of human impacts needs to be re-evaluated and probably expanded.

- Similarly, the popularity of the Park’s wildflowers can be harnessed to expand visitor knowledge of other important Park stories, perhaps gradually adjusting visitor expectations and lessening disappointment when the flowers aren’t at their peak.

- Calling attention to Park resources requires calling attention to their fragility. Placement of interpretive media must consider implications for resource protection.

- Recommendations for interpretive media need to be accompanied by recommendations for their upkeep and maintenance in order to prolong their usefulness in this harsh, remote environment.

While there is a designated authority for each core area, the effectiveness of coordination/management could benefit from having a designated authority to oversee and lead the multitude of landuse planning activities across buffer and transition areas. To this end, we are currently discussing with the United States Fish and Wildlife Service and Bureau of Land Management to participate in the Mojave and Colorado Deserts BR activities across these areas.

California State Parks and National Parks may differ somewhat in mandates and missions, but are largely similar in direction to conserve and manage for biodiversity while providing recreation, interpretive, and educational opportunities for visitors, local communities, and international audiances.

Balancing recreation, resource conservation, and access is always in the forefront of management decisions. Recreation activities and access can have direct, indirect, and cumulative impacts on natural resources within core areas. Some solutions have come in the form of changing the status of portions of core areas to designative wilderness areas to increase protection levels, as well as signage and ranger patrols/enforcement. The use of improved orientation systems have also been successfully used to help reduce the negative impacts of visitors deviating off of designated trails.

Photo by Greater SW Exploration Co.

Photo by Clark Short

Photo by CJ Crosby

Clark Dry Lake, ABDSP

Improved orientation systems can help reduce negative impacts; in this case, signage used to inform hikers to stay off of a non-designated trail slope reduced soil erosion.

7.4.1 Describe the main conflicts regarding access to, or the use of, resources in the area and the relevant timeframe. If the biosphere reserve has contributed to preventing or resolving some of these conflicts, explain what has been resolved or prevented, and how this was achieved for each zone?

See section 7.4 above.

7.4.2 Describe any conflicts in competence among the different administrative authorities involved in the management of the area comprising the biosphere reserve.

There are no conflicts in competence among the different administrative authorities. Agreements with administrative authorities outline processes for addressing issues as well as areas of common interest to focus. Differences in perspective can be resolved with slight differences in applications of ideas within respective areas of authority.

7.4.3 Explain the means used to resolve these conflicts, and their effectiveness. Describe its composition and functioning, resolution on a case-by-case basis. Are there local mediators; if so, are they approved by the biosphere reserve or by another authority?

Each person and organization has access to a full compliment of conflict resolution tools. Agreements by which different entities relate to each other generally identify internal conflict resolution mechanisms. Public workshops, hearings, and planning processes provide other methanisms. Mediation processes can be overseen by agencies or by local governments. Decision-making processes at site, local government, and agency levels bring discussion about conflicts to an understanding, closure, and initiate closure. The court systems and legislative bodies constitute the ultimate authorities for resolving conflicts, taking place in a civil and procedural manner.

7.5 Updated information about the representation and consultation of local communities and their participation in the life of the biosphere reserve:

Unique to Death Valley and Joshua Tree National Parks, the California Desert Protection Act of 1994 mandated that each park establish an advisory council. Those councils were to last for no more than 10 years, but were instrumental in establishing the direction and management of these parks. The advisory commissions were comprised of an elected official for each County within which any part of the park is located, a representative of the owners of private properties located within or immediately adjacent to the park, and other members representing persons actively engaged in grazing and range management, mineral exploration and development, and persons with expertise in relevant fields, including geology, biology, ecology, law enforcement, and the protection and management of National Park resources and values ; and consist of no more than 15 individuals.

Currently, each of the core areas maintains ongoing relationships with active groups and local governments. Each unit maintains a list of concerned individuals, groups and media outlets to distribute information and request community engagement.

7.5.1 Describe how local people (including women and indigenous people) are represented in the planning and management of the biosphere reserve (e.g., assembly of representatives, consultation of associations, women's groups).

Please see sections 2.3.1 and 7.3 for detailed explanations of the NEPA and CEQA processs and the requirements to include all members of the public in the decision processes. As described in those sections, representation effectively includes all membes of the public, including women and indigenous people, not just within the BR, but within California (under CEQA) and the United States of America (under NEPA). Citizens can participate as

individuals or as members of an organization. We ensure local representation occurs through public outreach, meetings, social media, and direct correspondence.

Anza-Borrego Desert State Park completed a General Plan in 2005 that includes a strategy and guidelines for community involvement and marketing. This plan enables the Anza-Borrego Desert State Park core area to engage the local people as integral members of their communities, sharing responsibilities for local and regional issues that include youth development, economic health, and planning. It also established goals to encourage all user groups to visit the core area, promote a variety of public outreach programs and marketing strategies that inform potential users of the core area. Anza-Borrego Desert State Park has developed and/or been involved with 5 separate venues oriented towards fostering cooperative involvement in the Anza-Borrego Desert State Park core area surrounding region, including the Anza-Borrego Desert State Park Paleontology Society, Colorado Desert District Archaeology Society Site Stewardship Program, Anza-Borrego Desert State Park Botany Society, Anza-Borrego Desert Naturalist Society, and Anza-Borrego Desert State Park local community volunteer groups. Anza-Borrego Desert State Park provides training and certification programs for members of these groups, who can then be involved with biological surveys, information gathering and associated digital storage, museum curation of paleontological, archaeological, and botanical specimens. Anza-Borrego Desert State Park also engages local Native American people, who refer to themselves as the Cahuilla, Kumeyaay, and Kwaaymii (the eastern extension of the Kumeyaay) Indians (De Barros 2014) in various ways, including having a designated member of that community participate in the environmental compliance process by providing comments on and evaluating potential archaeological impacts of various field activities during onsite visits. Local people also are involved in work within the biosphere reserve through various citizen science activities overseen by Anza-Borrego Desert State Park, including annual surveys for the iconic Peninsular bighorn sheep and neotropical migratory least Bell's vireo, as in addition to the Borrego Valley Hawkwatch event and National Bufferfly Association's Anza-Borrego Butterfly count.

7.5.2 What form does this representation take: companies, associations, environmental associations, trade unions (list the various groups)?

Additional groups beyond those referenced in section 7.5.1 that are directly and indirectly contacted, invited, and/or informed to engage in significant management issues/decisions (not an exhaustive list) include:

- Archeological Conservancy
- Back Country Horsemen, Redshank Riders Unit
- Back Country Horsemen of California, San Diego Unit
- Bighorn Institute
- Borrego Jeep Photo Tours
- Borrego Springs Chamber of Commerce
- Borrego Springs Civic Foundation
- Borrego Springs Fire Department
- Borrego Springs Unified School District
- Borrego Valley Endowment Fund
- Borrego Water District
- Buena Vista Audubon
- Cahuilla Band of Mission Indians
- California Conservation Corps
- California Department of Conservation, Division of Mines & Geology
- California Department of Corrections

- California Department of Fish and Wildlife
- California Department of Forestry and Fire Protection (CalFire)
- California Department of Parks & Recreation, Ocotillo Wells State Vehicular Recreation Area
- California Department of Transportation (CalTrans)
- California Department of Water Resources
- California Environmental Protection Agency
- California Invasive Plant Council
- California Native Plant Society – Bristlecone Chapter
- California Native Plant Society – Mojave Desert Chapter
- California Native Plant Society – Orange County Chapter
- California Native Plant Society – Riverside-San Bernardino Chapter
- California Native Plant Society – San Diego Chapter
- California Overland Tours
- California Society for Ecological Restoration
- California State Assembly, District 56 (Assemblyman Eduardo Garcia)
- California State Assembly, District 71 (Assemblyman Brian Jones)
- California State Historical Resources Commission
- California State Parks Foundation
- California State Senate, District 28 (Senator Jeff Stone)
- California State Senate, District 38 (Senator Joel Anderson)
- California State Senate, District 40 (Senator Ben Hueso)
- Center for Biological Diversity
- Coachella Valley Mountains Conservancy
- Conservation Biology Institute
- Death Valley Concervancy
- Death Valley Natural History Association
- Desert Bighorn Council
- Desert Fishes Council
- Desert Protective Council
- Destination Borrego
- Friends of the Desert Mountains
- Great Old Broads for Wilderness
- Imperial County Air Pollution Control District
- Imperial County Board of Supervisors, District 2 (Supervisor Jesus Terrazas)
- Imperial County Board of Supervisors, District 3 (Supervisor Michael Kelley)
- Imperial County Board of Supervisors, District 4 (Supervisor Ryan Kelley)
- Imperial County Department of Planning and Development Services
- Imperial County Sheriff/Coroner's Office
- Imperial Irrigation District
- International Dark-Sky Association
- Iipay Nation of Santa Ysabel
- Joshua Tree National Park Association
- Kumeyaay Diegueno Land Conservancy
- League of Conservation Voters
- Los Coyotes Band of Mission Indians
- National Association of Interpreters
- Native American Lands Conservancy
- Natural Resources Defense Council
- Ocotillo Wells Volunteer Fire Department
- Organization of Biological Field Stations

- Pacific Crest Trail Association
- Ranchita Volunteer Fire Department
- Resources Legacy Foundation
- Riverside Astronomical Society
- Riverside County Board of Supervisors, District 3 (Supervisor Chuck Washington)
- Riverside County Board of Supervisors, District 4 (Supervisor John Benoit)
- Safari Club International – San Diego Chapter
- San Diego Association of Geologists
- San Diego Association of Governments
- San Diego Audubon
- San Diego County Air Pollution Control District
- San Diego County Archeological Society
- San Diego County Board of Supervisors, County Supervisor, District 2 (Supervisor Diane Jacob)
- San Diego County Board of Supervisors, County Supervisor, District 5 (Supervisor Bill Horn)
- San Diego County Department of Agriculture, Weights and Measures
- San Diego County Department of Assessor/Recorder/County Clerk
- San Diego County Department of the Medical Examiner
- San Diego County Department of Parks and Recreation
- San Diego County Department of Planning and Land Use
- San Diego County Department of Public Works
- San Diego County District Attorney
- San Diego County Public Library
- San Diego County Sheriff's Department
- San Diego Gas & Electric
- San Diego Hang Gliding and Paragliding Association
- San Diego Natural History Museum
- San Diego Zoological Society
- Shelter Valley Volunteer Fire Department
- Sierra Club
- Society for Conservation Biology – Orange County Chapter
- Society for Conservation GIS
- Southern California Botanists
- Sunbelt Publications
- The Anza Trail Foundation
- The Nature Conservancy
- The Trust for Public Lands
- The Wilderness Society
- The Wildlife Society
- Tierra Del Sol Four Wheel Drive Club of San Diego
- Torres Martinez Desert Cahuilla Indians
- Tubb Canyon Desert Conservancy
- United States Department of Agriculture, Forest Service, Cleveland National Forest
- United States Department of Commerce, National Oceanic and Atmospheric Administration,
- National Weather Service
- United States Department of Defense
- United States Department of Homeland Security
- United States Department of the Interior, Bureau of Land Management, California Desert District

- United States Department of the Interior, Bureau of Land Management, Palm Springs Field Office
- United States Department of the Interior, Bureau of Land Management, El Centro Field Office
- United States Department of the Interior, Bureau of Land Management, South Coast Field Office
- United States Department of the Interior, Fish and Wildlife Service
- United States Department of the Interior, U.S. Geological Survey
- United States House of Representatives, District 36 (Congressman Raul Ruiz, M.D.)
- United States House of Representatives, District 50 (Congressman Duncan D. Hunter)
- United States House of Representatives, District 51 (Congressman Juan Vargas)
- United States Senate, Senator Barbara Boxer
- United States Senate, Senator Dianne Feinstein
- University of California, Davis, Wildlife Health Center
- University of California, Division of Agriculture and Natural Resources, Cooperative Extension
- University of California, Riverside, Center for Conservation Biology
- University of California, San Diego, Scripps Institution of Oceanography, Geosciences Research Division
- University of California, San Diego, Scripps Institution of Oceanography, Institute of Geophysics and Planetary Physics
- University of California, Santa Barbara, Earth Research Institute
- University of Nevada, Desert Research Institute, Western Regional Climate Center

7.5.3 Indicate whether there are procedures for integrating the representative body of local communities (e.g., financial, election of representatives, traditional authorities).

We provide access for local representation through public outreach - meetings, social media and direct correspondence. Opportunities exist for individuals to voice their opinions through written and oral comment at the local, regional and national level of the executive branch of government and also to the legislative branch – local, regional, state and national elected officials. Any individual who meets age requirements is eligible to stand for election to any elected body of government – there is no financial eligibility test. Indian tribes establish their own sovereign procedures for electing tribal leaders that may include recognition of traditional authorities. We regularlly meet with elected officals to better understand the needs of our local communities.

7.5.4 How long-lived is the consultation mechanism (e.g., permanent assembly, consultation on specific projects)?

The primary consultation mechanisms are permanent as reflected in the 1969 public law – the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The duration established for consultation on any specific project is determined by the characteristics of the project and the nature of the decision that is to be made. Each issue will have a different level of public engagement depending upon the size, scope and relative impact of a proposal. The NEPA/CEQA process will take the time it needs to resolve any particular issue. Additional federal laws that require consultation with the public include the National Historic Preservation Act (NHPA). NHPA is the primay means of consulting on cultural resources.

In other cases, issues are resolved through the ballot box, in which cases specific procedures and timetables are prescribed and followed.

7.5.5 What is the impact of this consultation on the decision-making process (decisional, consultative or merely to inform the population)?

Consultation can take on many forms, but it is generally to seek input from the public on management decisions. Within the NEPA/CEQA process there are actions considered day-to-day which do not require additional consultation. Beyond the list of categorical exclusions, management decisions are put before the public to weigh in; typically these are long-term management plans.

7.5.6 At which step in the existence of a biosphere reserve is the population involved: creation of the biosphere reserve, drawing up of the management plan, implementation of the plan, day to day management of the biosphere reserve? Give some practical examples.

Across this reserve we have hundreds of agreements and partnerships to work together in all zones to protect the deserts for current and future generations, while balancing the need for conservation, recreation, and development. Thousands of people engage in management decisions throught the NEPA and CEQA processes.

7.6 Update on management and coordination structure:
7.6.1 Describe any changes regarding administrative authorities that have competence for each zone of the biosphere reserve (core area(s), buffer zone(s) and transition area(s))? If there are any changes since the nomination form/last periodic review report, please submit the original endorsements for each area.

In this report we have listed several active and long running partnerships that our National and State Park core area units have entered into in the context of our Park work. Although our work is in line with Biosphere functions, the partnerships have not been entered into in the context of the existing Biosphere. For the purpose of the Biosphere, we aim to continue working with our partners and to engage them with the Biosphere objectives and messaging into the future.

7.6.2 Update information about the manager(s)/coordinator(s) of the biosphere reserve including designation procedures.

We are working to establish a clear lines of authority, responsibity, and accountability for coordination of the the Mojave and Colorado Deserts BR. We have initiated discussions around an MOU and Charter or incorporating into the Desert Managers Group. Both efforts are well under way, but not ready for submission with this report. We will have an MOU and Charter ready in the summer of 2017. Additionally, we have requested to be on the agenda of the next Desert Managers Group meeting in November 2016 to present the MAB concept and request this group adopt the oversight of the reserve. The DMG has the exact geographic footprint and has a similar mission as the MAB. Informal discussions with members of this group sound promising.

The desire to pursue this Periodic Review to keep our standing with the MAB Program of UNESCO was vetted with all authorities within the core area units described in this report.

7.6.3 Are there any changes with regard to the coordination structure of the biosphere reserve? (if yes, describe in details its functioning, composition and the relative proportion of each group in this structure, its role and competence.). Is this coordination structure autonomous or is it under the authority of local or central government, or of the manager of the biosphere reserve?).

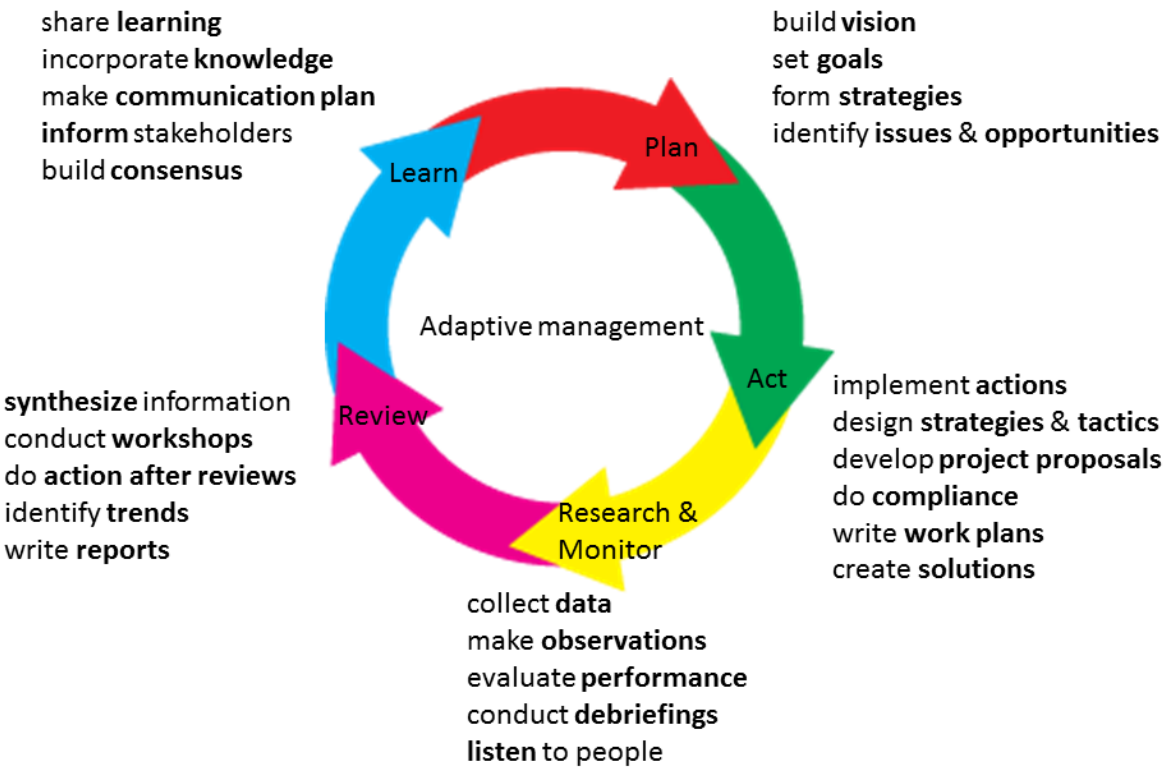
There are no changes at this time. The coordination structure remains a voluntary partnership that draws on functions, competencies, and authorities of each of its partners.

7.6.4 How has the management/coordination been adapted to the local situation?

The core area units have begun to have regually scheduled conference calls to discuss the Biosphere Reserve, the periodic review, and how to move forward into the future as a cohesive unit.

7.6.5 Was the effectiveness of the management/coordination evaluated? If yes, was it according to a procedure?

Management effectiveness is evaluated at the core unit level. Effectiveness is evaluated through an adapative management process. Most of the evaluations are qualitative; however, thorough reflection through an After Action Review process allows participants to engage in feedback and provide opportunity for adaptation to occur.



Additionally, numerous 'trailing indicators' are used to determine if we collectively are on the proper course including an understanding of: unresolved conflicts, complaints, and compliance with policies. In particular, the number of active law suits can be telling about success in management

7.7 Update on the management/cooperation plan/policy:
7.7.1 Are there any changes with regard to the management/cooperation plan/policy and the stakeholders involved? If yes, provide detailed information on process for involvement of stakeholders, adoption and revision of the plan.

No changes to report at this time.

7.7.2 Describe contents of the management/cooperation plan (provide some examples of measures and guidelines). Is the plan binding? Is it based on consensus?

Per the detailed discussion in 7.2 of this document, the agreements are non-binding voluntary agreements to collaborate and share resources. They are specifically focused on improving the quality of activities in areas outside the Managed Use Area so as to improve sustainable development and conservation of biological diversity.

7.7.3 Describe the role of the authorities in charge of the implementation of the plan. Describe institutional changes since the nomination form/last periodic review report. Please provide evidence of the role of these authorities.

The institutional relationships have not changed in nature but have gotten stronger over the years since the original nomination. No formal plan exist at this time for the management of the BR. In this report we have listed several active and long running partnerships that our National and State Park core area units have entered into in the context of our Park work. Although our work is in line with Biosphere functions, the partnerships have not been entered into in the context of the existing Biosphere. For the purpose of the Biosphere, we aim to continue working with our partners and to engage them with the Biosphere objectives and messaging into the future.

7.7.4 Indicate how the management plan addresses the objectives of the biosphere reserve.

No formal plan exist at this time for the management of the BR. In this report we have listed several active and long running partnerships that our National and State Park core area units have entered into in the context of our Park work. Although our work is in line with Biosphere functions, the partnerships have not been entered into in the context of the existing Biosphere. For the purpose of the Biosphere, we aim to continue working with our partners and to engage them with the Biosphere objectives and messaging into the future.

7.7.5 What are the progresses with regard to the guidelines of the management/cooperation plan/policy?

We have demonstrated throughout this report the Mojave and Colorado Desert BR is operating and collaborating across more then 20 million acres to influance conservation and sustainable development at multiple levels ranging from the ecoregional level to the rual gatway communities. Together these agreements encourage actions that both protect biodiversity and encourage sustainable development

7.7.6 Were there any factors and/or changes that impeded or helped with the implementation of the management/coordination plan/policy? (Reluctance of local people, conflicts between different levels of decision-making).

Key to facilitating success with implementation is the National Environmental Policy Act and the California Environmental Quality Act. These clearly provide a process that is inclusive and is able to address conflict. The many agreements also facilitate success by identifying common goals and desired individual and common actions to achieve those goals.

7.7.7 If applicable, how is the biosphere integrated in regional/national strategies? Vice versa, how are the local/municipal plans integrated in the planning of the biosphere reserve?
(Please provide detailed information if there are any changes since the nomination form/last periodic review report).

Nothing to report at this time.

8. CRITERIA AND PROGRESS MADE:

[Conclude by highlighting the major changes, achievements, and progress made in your biosphere reserve since nomination or the last periodic review. How does your biosphere reserve fulfill the criteria. Develop justification for the site to be a biosphere reserve and rationale for the zonation. What is lacking, and how could it be improved? What can your biosphere reserve share with others on how to implement sustainable development into practice?]

Brief justification of the way in which the biosphere reserve fulfills each criteria of article 4 of the Statutory Framework of the World Network of Biosphere Reserves:

1. "Encompass a mosaic of ecological systems representative of major biogeographic region(s), including a gradation of human interventions".
(The term "major biogeographic region" is not strictly defined but it would be useful to refer to the Udvardy classification system (http://www.unep-wcmc.org/udvardys-biogeographical-provinces-1975_745.html)).

The Mojave and Colorado Deserts Biosphere Reserve encompasses a mosaic of ecological systems representative of 2 major biogeographic regions (the Mojave Desert and Colordao portion of Sonoran Desert), including a gradation of human interventions from the 3 core areas to the transition areas (Figure 1).

2. "Be of Significance for biological diversity conservation".

The biogeographic regions within the Mojave and Colorado Deserts BR support a high level of biodiversity, with Anza-Borrego Desert State Park core area alone supporting more than 270 species of birds, 50 species of mammals, 14 species of amphibians, 60 species of reptiles, many insects, and hundreds of plant species and sensitive species that are of significance for biological diversity conservation. Due to its high avian diversity, the Anza-Borrego Desert State Park was designated a Globally Important Bird Area by the American Bird Conservancy in 2001.
In its current configuration, the Mojave and Colorado Deserts BR represents the majority of habitats and sanctuary for desert tortoise and desert and Penenisular big horn sheep within the core areas.

3. "Provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale".
(Including examples or learning experiences from putting sustainable development into practice).

The Mojave and Colorado Deserts BR authorities, stakeholders, and local environmental communities are active in conserving these resources. Additionally, the geographic position of the Mojave and Colorado Deserts BR within this desert environment provides a rich opportunity for renewable energy development, and recentregional, state, and federal plans for this type of development have taken place, providing an opportunity to explore and demonstrate approaches to sustainable development on a regional scale.

4. "Have an appropriate size to serve the three functions of biosphere reserves".

The Mojave and Colorado Deserts BR encompasses 25898947 acres of land supporting landscape and ecosystem-level processes, including diverse environmental, biological, and human development gradients by which landscape and ecosystem-scale consevatoin efforts can contribute to species and genetic diversity, as well as foster economic and human development which is socio-culturally and ecologically sustainable. The vast size of the Mojave and Colorado Deserts BR enables the core area authorties to provide logistical support for demonstration projects, environmental education and training, research and monitoring related to local, regional, national and global issues of conservation, and sustainable development.

5. Appropriate zonation to serve the three functions

It includes these functions across its 3 relatively large core areas (Figure 1), a clearly identified buffer zone that largely surrounds each core area and is administered by federal land management agencies where activities compatible with the conservation objectives can take place, and a transition area that emerges outward from the buffer where sustainable resource management practices are promoted and developed.

6. "Organizational arrangements should be provided for the involvement and participation of a suitable range of inter alia public authorities, local communities and private interests in the design and the carrying out of the functions of a biosphere reserve".

The Mojave and Colorado Deserts BR authorities, through their obligations under federal and state environmental processes provide for the involvement and participation of a suitable range of inter alia public authorities, local communities and private interests in the design and carrying out the functions on lands occurring within the biosphere reserve.

7. Mechanisms for implementation:

a) Mechanisms to manage human use and activities

Each area has discrete and distinctive authority as described through numerous laws and policies such as: the Organic Act, the Wilderness Act, etc.

b) Management policy or plan

Each of the core areas has a management plan which clearly outlines direction and goals. Those goals dictate how the core units engage collaboratively across jusridictional boundaries.

c) Authority or mechanism to implement this policy or plan

Authorities are clear per 7a and 7b above, as explained in Section 7 of this document.

d) Programmes for research, monitoring, education and training

The core area authorities have implemented programmes for research, monitoring, education and training, as described in previous sections of this report, and we continue to identify and implement mechanisms to manage human use and activities in the buffer zone, a management policy or plan for the area as a biosphere reserve, and a designated authority or mechanism to implement this policy or plan.

Does the biosphere reserve have cooperative activities with other biosphere reserves (exchanges of information and staff, joint programmes, etc.)?

At the national level:

We benefit from other biosphere reserves within the national park system and in the United States. In August 2016, 19 distinct biosphere reserves met in Rocky Mountian National Park to engage with the UNESCO delgates and explore deeply the periodic review process. This process was instramental in establishing lines of communitcation across the US bioshpere reserves. We now have a cadre of informed members across the country.

At the regional level:

See above for the national level.

Through twinning and/or transboundary biosphere reserves:

No applicable at this time.

Within the World Network:

Each of the Core area units is engaged in conversations with international parks and world heritage sites. In some cases, these relationships are informal and amount to information sharing or they are formal and result in agreements such as the one described in this document between Anza Borrego Desert State Park and Mongolia.

Obstacles encountered, measures to be taken and, if appropriate, assistance expected from the Secretariat:

The primary obstacle has been finding a way forward for U.S. Biosphere Reserves. The Secretariat, the Bureau, the ICC and Member States have been helpful to the U.S. in sorting out how to best accomplish a way forward, and for that we are grateful.

The difficult spot appears to be how the aforementioned groups will interpret Section 7 of this document. We have done our best to articulate how we indeed have all three zones represented and a coordinated governance of those zones. It functions as intended by the Statutory Framework. The way we have to ‘form’ the BR is ‘tricky’ given the legal structure provided for in government. However, Section 7 documents how to accomplish this task, legally, and with good spirit of collaboration.

We invite the Secretariat, the Bureau and the ICC to support the Statutory Framework’s accounting for different approaches to being a BR, by different government systems.

At a time in our history when we have so many challenges to conserve biodiversity the planet needs more places on the path to sustainable development, not fewer. We believe we exemplify the path of sustainability for the U.S. and would do well to represent the network of biosphere reserves.

Main objectives of the Biosphere Reserve:

Describe the main objectives of the biosphere reserve integrating the three functions and the sustainable development objectives for the coming years.

Maintain a healthy, sustainable California Desert landscape that ensures adaptability and resilience to the effects of change.

Promote a greater understanding of the desert and its resources so that citizens can make informed choices about land use in this unique and often misunderstood region.……..……..…

9. SUPPORTING DOCUMENTS

[List of the annexes submitted with periodic review report.]

(1) Updated location and zonation map with coordinates

[Provide the biosphere reserve's standard geographical coordinates (all projected under WGS 84). Provide a map on a topographic layer of the precise location and delimitation of the three zones of the biosphere reserve (Map(s) shall be provided in both paper and electronic copies). Shapefiles (also in WGS 84 projection system) used to produce the map must also be attached to the electronic copy of the form. If applicable, also provide a link to access this map on the internet (e.g. Google map, website…).]

- Map with zones provided
- Table with Statutory Framework for the Mojave and Colorado Deserts BR

(2) Updated vegetation map or land cover map

[A vegetation map or land cover map showing the principal habitats and land cover types of the biosphere reserve should be provided, if available.]

- Not provided at this time. The scale of the MCDBR make the map difficult to read.

(3) Updated list of legal documents (if possible with English, French or Spanish synthesis of its contents and a translation of its most relevant provisions)

[If applicable update the principal legal documents since the nomination of the biosphere reserve and provide a copy of these documents.]

- California Desert Protection Act

(4) Updated list of land use and management/cooperation plans

[List existing land use and management/cooperation plans (with dates and reference numbers) for the administrative area(s) included within the biosphere reserve. Provide a copy of these documents. It is recommended to produce an English, French or Spanish synthesis of its contents and a translation of its most relevant provisions.] Not exhaustive. There are hundreds of mandgement a cooperative plans. These are the main documents cuted in this report.

- Amargosa River Basin Coordination Group MOU
- Anza-Borrego Desert State Park – General Plan
- Anza-Borrego Desert State Park - Cultural Preserve Management Plan
- Death Valley National Park General Management Plan
- Death Valley Backcountry and Wilderness Stewardship Plan
- Desert Managers Group Charter
- Desert Managers Group MOU for participation
- Desert Managers Group Strategic Plan
- Joshua Tree National Park General Management Plan
- Joshua Tree National Park Foundation document
- Morongo Basin Open Space Group
- Santa Rosa San Jacinto National Monument Management Plan

(5) Updated species list (to be annexed)

[Provide a list of important species occurring within the proposed biosphere reserve, including common names, wherever possible.]

- Provided in text and at the individual Core unit web sites

(6) Updated list of main bibliographic references (to be annexed)
[Provide a list of the main publications and articles of relevance to the proposed biosphere reserve.]

- Attached see Annex 6.

(7) Further supporting documents.

- None at this time

10. ADRESSES

10.1 Contact address of the proposed biosphere reserve:
[Government agency, organization, or other entity (entities) to serve as the main contact to whom all correspondence within the World Network of Biosphere Reserves should be addressed.]

Name: Josh Hoines _____
Street or P.O. Box: P.O. Box 579 _____
City with postal code: Death Valley, CA. 92328 _____
Country: USA _____
Telephone: 760-786-3253 _____
E-mail: Josh_Hoines@NPS.gov _____
Web site: https://www.nps.gov/deva_____

20.2. Administering entity of the core area(s):

Name: Jeff Manning _____
Street or P.O. Box: California State Parks Colorado Desert District _____
City with postal code: Borrego Springs, California 92004_____
Country: USA _____
Telephone: 760-767-4315 _____
E-mail: Jeff.Manning@parks.CA.gov_____
Web site: _____

20.3. Administering entity of the buffer zone(s):

Name: TBD _____
Street or P.O. Box: _____
City with postal code: _____
Country: _____
Telephone: _____
E-mail: _____
Web site:_____

20.4. Administering entity of the transition area(s):

Name: TBD _____
Street or P.O. Box: _____
City with postal code: _____
Country: _____
Telephone: _____
E-mail: _____
Web site: _____

Annex I to the Biosphere Reserve Periodic Review, January 2013
MABnet Directory of Biosphere Reserves

Administrative details

Country: United States of America
Name of BR: Mojave and Colorado Deserts Biosphere Reserve
Year designated: 1984
Administrative authorities: (7.6)

Anza Borrego Desert State Park – California Public Resource Code 5019.74 and pp3-6 of the ABDSP 2005 General Plan.

Death Valley National Park - Presidential Proclamation No.2028, February 11, 1933, establishment of Death Valley National Monument; California Desert Protection Act, October 31, 1994 (Public Law 103-433, Sec. 21), establishment of Death Valley National Park and designation of Death Valley Wilderness; The Timbisha Shoshone Homeland Act, November 1, 2000 (Public Law 106-423 Sec. 2102), establishment of nonexclusive special use areas for the Timbisha Shoshone Tribe

Joshua Tree National Park - Proclamation (No. 2193) of August 10, 1936 (additional Laws and Policies pp28-33 Appendix A of Foundation Document.

Santa Rosa San Jacinto National Monument - The Santa Rosa and San Jacinto Mountains National Monument Act of 2000 (Public Law 106-351)

Name Contact: (10.1) Josh Hoines
Contact address: *(Including phone number, postal and email adresses)* (10.1)
Josh_Hoines@nps.gov
760-786-3253
P.O. Box 579
Death Valley, CA 92328

Related links: *(web sites)*
Social networks: (6.5.4)

Description

General description:

Approximately 25 lines

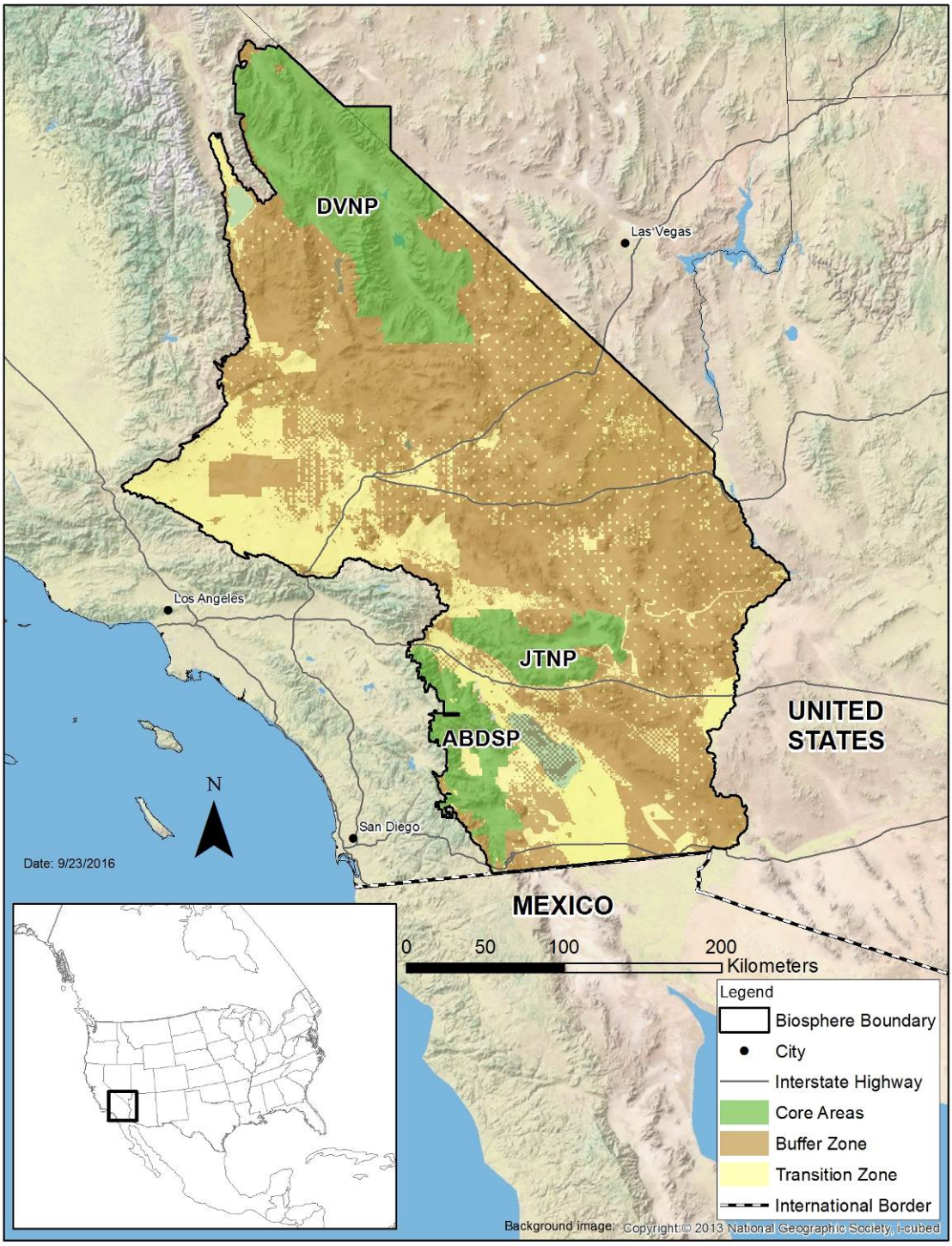
This cluster biosphere reserve is situated in south-east California and comprises four management units: the Death Valley National Monument, Joshua Tree National Monument, the Santa Rosa Mountains Wildlife Management Area and Anza Borrego Desert State Park.

Death Valley, the principal feature of the biosphere reserve encompasses a substantial percentage of the northern Mojave Desert. This combined with its extreme altitude range (86 below to 3,368 meters above sea level) results in a large diversity of features at the northern edge of this biogeographic region. Rugged, sparsely vegetated mountains border a north-south oriented valley, and are incised by numerous deep rocky canyons terminating in huge alluvial fans. Lower and middle elevations are dominated by shrubs such as creosote bush (Larrea divaricata), sagebrush (Atriplex spp.), mormon tea (Ephedra sp.) and blackbrush (Coleogyne ramosissima). Trees include the Utah juniper (Juniperus osteosperma) and one needle pine (Pinus monophylla).

Joshua Tree National monument, some 20 km east of Los Angeles, straddles the transition area between Mojave and Colorado Deserts and is known for its Joshua tree (Yucca brevifolia) woodlands, a typical feature of the Mojave Desert which is higher, moister and slightly cooler. However, there are also characteristic species of the lower Colorado Desert including Washingtonia spp.

Mining activities, the presence of large numbers of feral donkeys (Equus asinus) and trespass grazing by cattle, off-road vehicles as well as tourism activities are the main human influences in the region. By using the biosphere reserve concept, it is expected that user conflicts in this multiple use area can be solved.

Major ecosystem type: Desert/Arid Lands
Major habitats & land cover types: Desert, Montane, and Riparian
Bioclimatic zone:
Location (latitude & longitude):
Total Area (ha): 12,243,610
Core area*(s):* 3,788,739
Buffer zone*(s):*6,186814
Transition area*(s):*2,268,057
Different existing zonation:
Altitudinal range *(*metres above sea level): -86 to 3368
Zonation map(s) (refer to section 2.2.2):



Main objectives of the biosphere reserve

Brief description

Approximately 5 lines

Maintain a healthy, sustainable California Desert landscape that ensures adaptability and resilience to the effects of change.

Promote a greater understanding of the desert and its resources so that citizens can make informed choices about land use in this unique and often misunderstood region.

Research

Brief description

Approximately 5 lines
Provide land and resource managers with a relevant understanding and knowledge of natural resources, ecosystems, and processes within the California Desert and how changing environments will affect long-term sustainability and adaptability.

Monitoring

Brief description

Approximately 5 lines
The primary goals of the Inventory and Monitoring Program are to inventory natural resources, monitor park ecosystems, establish natural resource inventory and monitoring as a standard practice, integrate natural resource inventory and monitoring information into planning, management, and decision making, and share accomplishments and information with other natural resource organizations and form partnerships.

Specific variables (fill in the table below and tick the relevant parameters)

Abiotic		Biodiversity	
Abiotic factors	X	Afforestation/Reforestation	
Acidic deposition/Atmospheric factors		Algae	
Air quality	X	Alien and/or invasive species	X
Air temperature	X	Amphibians	X
Climate, climatology	X	Arid and semi-arid systems	X
Contaminants		Autoecology	X
Drought	X	Beach/soft bottom systems	
Erosion	X	Benthos	X
Geology	X	Biodiversity aspects	X
Geomorphology	X	Biogeography	X
Geophysics		Biology	X
Glaciology		Biotechnology	
Global change	X	Birds	X
Groundwater	X	Boreal forest systems	
Habitat issues	X	Breeding	
Heavy metals	X	Coastal/marine systems	
Hydrology	X	Community studies	X
Indicators		Conservation	X
Meteorology		Coral reefs	
Modeling	X	Degraded areas	X
Monitoring/methodologies	X	Desertification	X
Nutrients	X	Dune systems	X
Physical oceanography		Ecology	X
Pollution, pollutants	X	Ecosystem assessment	X
Siltation/sedimentation		Ecosystem functioning/structure	X
Soil	X	Ecosystem services	X
Speleology		Ecotones	
Topography	X	Endemic species	X
Toxicology		Ethology	
UV radiation	x	Evapotranspiration	X
		Evolutionary studies/Palaeoecology	X
		Fauna	X
		Fires/fire ecology	X
		Fishes	X
		Flora	X
		Forest systems	X
		Freshwater systems	X
		Fungi	
		Genetic resources	
		Genetically modified organisms	
		Home gardens	
		Indicators	
		Invertebrates	X
		Island systems/studies	
		Lagoon systems	
		Lichens	X
		Mammals	X
		Mangrove systems	
		Mediterranean type systems	
		Microorganisms	
		Migrating populations	

		Modeling	
		Monitoring/methodologies	
		Mountain and highland systems	X
		Natural and other resources	X
		Natural medicinal products	
		Perturbations and resilience	X
		Pests/Diseases	X
		Phenology	X
		Phytosociology/Succession	
		Plankton	
		Plants	X
		Polar systems	
		Pollination	
		Population genetics/dynamics	X
		Productivity	
		Rare/Endangered species	X
		Reptiles	X
		Restoration/Rehabilitation	X
		Species (re) introduction	X
		Species inventorying	X
		Sub-tropical and temperate rainforest	
		Taxonomy	X
		Temperate forest systems	
		Temperate grassland systems	
		Tropical dry forest systems	
		Tropical grassland and savannah systems	
		Tropical humid forest systems	
		Tundra systems	
		Vegetation studies	X
		Volcanic/Geothermal systems	
		Wetland systems	
		Wildlife	X

		Integrated monitoring	
Agriculture/Other production systems		Biogeochemical studies	
Agroforestry		Carrying capacity	
Anthropological studies	X	Climate change	X
Aquaculture		Conflict analysis/resolution	X
Archaeology	X	Ecosystem approach	X
Bioprospecting		Education and public awareness	X
Capacity building		Environmental changes	
Cottage (home-based) industry		Geographic Information System (GIS)	X
Cultural aspects	X	Impact and risk studies	
Demography		Indicators	
Economic studies	X	Indicators of environmental quality	
Economically important species		Infrastructure development	X
Energy production systems		Institutional and legal aspects	
Ethnology/traditional practices/knowledge	X	Integrated studies	
Firewood cutting		Interdisciplinary studies	X
Fishery		Land tenure	
Forestry		Land use/Land cover	
Human health		Landscape inventorying/monitoring	
Human migration		Management issues	X
Hunting		Mapping	X
Indicators		Modeling	
Indicators of sustainability		Monitoring/methodologies	
Indigenous people's issues	X	Planning and zoning measures	
Industry		Policy issues	X
Livelihood measures		Remote sensing	
Livestock and related impacts		Rural systems	X
Local participation		Sustainable development/use	
Micro-credits		Transboundary issues/measures	
Mining	X	Urban systems	
Modeling		Watershed studies/monitoring	X
Monitoring/methodologies			
Natural hazards			
Non-timber forest products			
Pastoralism			
People-Nature relations			
Poverty			
Quality economies/marketing			
Recreation	X		
Resource use	X		
Role of women			
Sacred sites			
Small business initiatives			
Social/Socio-economic aspects			
Stakeholders' interests	X		
Tourism	X		
Transports			

Annex II to the Biosphere Reserve Periodic Review, January 2013

Promotion and Communication Materials for the biosphere reserve

Provide some promotional material regarding the site, notably high quality photos, and/or short videos on the site so as to allow the Secretariat to prepare appropriate files for press events. To this end, a selection of photographs in high resolution (300 dpi), with photo credits and captions and video footage (rushes), without any comments or sub-titles, of professional quality – DV CAM or BETA only, will be needed.

In addition, return a signed copy of the following Agreements on Non-Exclusive Rights for photo(s) and video(s).

United Nations Educational, Scientific and Cultural Organization
Organisation des Nations Unies pour l'éducation, la science et la culture
Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura
Организация Объединенных Наций по вопросам образования, науки и культуры
منظمة الأمم المتحدة للتربية والعلم والثقافة
联合国教育、科学及文化组织

UNESCO Photo Library
Bureau of Public Information

AGREEMENT GRANTING NON-EXCLUSIVE RIGHTS

Reference:

1. a) I the undersigned, copyright-holder of the above mentioned photo(s) hereby grant to UNESCO free of charge the non-exclusive right to exploit, publish, reproduce, diffuse, communicate to the public in any form and on any support, including digital, all or part of the photograph(s) and to licence these rights to third parties on the basis of the rights herein vested in UNESCO

   b) These rights are granted to UNESCO for the legal term of copyright throughout the world.

   c) The name of the photographer will be cited alongside UNESCO's whenever his/her work is used in any form.

2. I certify that:

   a) I am the sole copyright holder of the photo(s) and am the owner of the rights granted by virtue of this agreement and other rights conferred to me by national legislation and pertinent international conventions on copyright and that I have full rights to enter into this agreement.

   b) The photo(s) is/are in no way whatever a violation or an infringement of any existing copyright or licence, and contain(s) nothing obscene, libellous or defamatory.

   Name and Address:

   Signature : Date :

(Sign, return to UNESCO two copies of the Agreement and retain the original for yourself)
Mailing address: 7 Place Fontenoy, 75352 Paris 07 SP, Direct Telephone: 00331 – 45681687
Direct Fax: 00331 – 45685655; e-mail: photobank@unesco.org; m.ravassard@unesco.org

United Nations Educational, Scientific and Cultural Organization
Organisation des Nations Unies pour l'éducation, la science et la culture
Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura
Организация Объединенных Наций по вопросам образования, науки и культуры
منظمة الأمم المتحدة للتربية والعلم والثقافة
联合国教育、科学及文化组织

UNESCO PHOTO LIBRARY
Bureau of Public Information

AGREEMENT GRANTING NON-EXCLUSIVE RIGHTS

Reference:

1. a) I the undersigned, copyright-holder of the above mentioned video(s) hereby grant to UNESCO free of charge the non-exclusive right to exploit, publish, reproduce, diffuse, communicate to the public in any form and on any support, including digital, all or part of the photograph(s) and to licence these rights to third parties on the basis of the rights herein vested in UNESCO

   b) These rights are granted to UNESCO for the legal term of copyright throughout the world.

   c) The name of the author/copyright holder will be cited alongside UNESCO's whenever his/her work is used in any form.

2. I certify that:

   a) I am the sole copyright holder of the video(s) and am the owner of the rights granted by virtue of this agreement and other rights conferred to me by national legislation and pertinent international conventions on copyright and that I have full rights to enter into this agreement.

   b) The video(s) is/are in no way whatever a violation or an infringement of any existing copyright or licence, and contain(s) nothing obscene, libellous or defamatory.

Name and Address:

Signature : Date:

(Sign, return to UNESCO two copies of the Agreement and retain the original for yourself)
Mailing address: 7 Place Fontenoy, 75352 Paris 07 SP, Direct Telephone: 00331 – 45681687
Direct Fax: 00331 – 45685655; e-mail: photobank@unesco.org; m.ravassard@unesco.org

Annex III to the Biosphere Reserve Periodic Review, January 2013
The Statutory Framework of the World Network of Biosphere Reserves

Introduction

Within UNESCO's Man and the Biosphere (MAB) programme, biosphere reserves are established to promote and demonstrate a balanced relationship between humans and the biosphere. Biosphere reserves are designated by the International Co-ordinating Council of the MAB Programme, at the request of the State concerned. Biosphere reserves, each of which remains under the sole sovereignty of the State where it is situated and thereby submitted to State legislation only, form a World Network in which participation by the States is voluntary.

The present Statutory Framework of the World Network of Biosphere Reserves has been formulated with the objectives of enhancing the effectiveness of individual biosphere reserves and strengthening common understanding, communication and co-operation at regional and international levels.

This Statutory Framework is intended to contribute to the widespread recognition of biosphere reserves and to encourage and promote good working examples. The delisting procedure foreseen should be considered as an exception to this basically positive approach, and should be applied only after careful examination, paying due respect to the cultural and socio-economic situation of the country, and after consulting the government concerned.

The text provides for the designation, support and promotion of biosphere reserves, while taking account of the diversity of national and local situations. States are encouraged to elaborate and implement national criteria for biosphere reserves which take into account the special conditions of the State concerned.

Article 1 - Definition

Biosphere reserves are areas of terrestrial and coastal/marine ecosystems or a combination thereof, which are internationally recognized within the framework of UNESCO's programme on Man and the Biosphere (MAB), in accordance with the present Statutory Framework.

Article 2 - World Network of Biosphere Reserves

1. Biosphere reserves form a worldwide network, known as the World Network of Biosphere Reserves, hereafter called the Network.
2. The Network constitutes a tool for the conservation of biological diversity and the sustainable use of its components, thus contributing to the objectives of the Convention on Biological Diversity and other pertinent conventions and instruments.
3. Individual biosphere reserves remain under the sovereign jurisdiction of the States where they are situated. Under the present Statutory Framework, States take the measures which they deem necessary according to their national legislation.

Article 3 - Functions

In combining the three functions below, biosphere reserves should strive to be sites of excellence to explore and demonstrate approaches to conservation and sustainable development on a regional scale:

(i) conservation - contribute to the conservation of landscapes, ecosystems, species and genetic variation;

(ii) development - foster economic and human development which is socio-culturally and ecologically sustainable;

(iii) logistic support - support for demonstration projects, environmental education and training, research and monitoring related to local, regional, national and global issues of conservation and sustainable development.

Article 4 - Criteria

General criteria for an area to be qualified for designation as a biosphere reserve:

1. It should encompass a mosaic of ecological systems representative of major biogeographic regions, including a gradation of human interventions.
2. It should be of significance for biological diversity conservation.
3. It should provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale.
4. It should have an appropriate size to serve the three functions of biosphere reserves, as set out in Article 3.
5. It should include these functions, through appropriate zonation, recognizing:

(a) a legally constituted core area or areas devoted to long-term protection, according to the conservation objectives of the biosphere reserve, and of sufficient size to meet these objectives;
(b) a buffer zone or zones clearly identified and surrounding or contiguous to the core area or areas, where only activities compatible with the conservation objectives can take place;
(c) an outer transition area where sustainable resource management practices are promoted and developed.

6. Organizational arrangements should be provided for the involvement and participation of a suitable range of inter alia public authorities, local communities and private interests in the design and carrying out the functions of a biosphere reserve.
7. In addition, provisions should be made for:

(a) mechanisms to manage human use and activities in the buffer zone or zones;
(b) a management policy or plan for the area as a biosphere reserve;
(c) a designated authority or mechanism to implement this policy or plan;
(d) programmes for research, monitoring, education and training.

Article 5 - Designation procedure

1. Biosphere reserves are designated for inclusion in the Network by the International Co-ordinating Council (ICC) of the MAB programme in accordance with the following procedure:

(a) States, through National MAB Committees where appropriate, forward nominations with supporting documentation to the secretariat after having reviewed potential sites, taking into account the criteria as defined in Article 4;
(b) the secretariat verifies the content and supporting documentation: in the case of incomplete nomination, the secretariat requests the missing information from the nominating State;
(c) nominations will be considered by the Advisory Committee for Biosphere Reserves for recommendation to ICC;
(d) ICC of the MAB programme takes a decision on nominations for designation. The Director-General of UNESCO notifies the State concerned of the decision of ICC.

2. States are encouraged to examine and improve the adequacy of any existing biosphere reserve, and to propose extension as appropriate, to enable it to function fully within the Network. Proposals for extension follow the same procedure as described above for new designations.
3. Biosphere reserves which have been designated before the adoption of the present Statutory Framework are considered to be already part of the Network. The provisions of the Statutory Framework therefore apply to them.

Article 6 - Publicity

1. The designation of an area as a biosphere reserve should be given appropriate publicity by the State and authorities concerned, including commemorative plaques and dissemination of information material.

2. Biosphere reserves within the Network, as well as the objectives, should be given appropriate and continuing promotion.

Article 7 - Participation in the Network

1. States participate in or facilitate co-operative activities of the Network, including scientific research and monitoring, at the global, regional and sub-regional levels.
2. The appropriate authorities should make available the results of research, associated publications and other data, taking into account intellectual property rights, in order to ensure the proper functioning of the Network and maximize the benefits from information exchanges.
3. States and appropriate authorities should promote environmental education and training, as well as the development of human resources, in co-operation with other biosphere reserves in the Network.

Article 8 - Regional and thematic subnetworks

States should encourage the constitution and co-operative operation of regional and/or thematic subnetworks of biosphere reserves, and promote development of information exchanges, including electronic information, within the framework of these subnetworks.

Article 9 - Periodic review

1. The status of each biosphere reserve should be subject to a periodic review every ten years, based on a report prepared by the concerned authority, on the basis of the criteria of Article 4, and forwarded to the secretariat by the State concerned.
2. The report will be considered by the Advisory Committee for Biosphere Reserves for recommendation to ICC.
3. ICC will examine the periodic reports from States concerned.
4. If ICC considers that the status or management of the biosphere reserve is satisfactory, or has improved since designation or the last review, this will be formally recognized by ICC.
5. If ICC considers that the biosphere reserve no longer satisfies the criteria contained in Article 4, it may recommend that the State concerned take measures to ensure conformity with the provisions of Article 4, taking into account the cultural and socio-economic context of the State concerned. ICC indicates to the secretariat actions that it should take to assist the State concerned in the implementation of such measures.
6. Should ICC find that the biosphere reserve in question still does not satisfy the criteria contained in Article 4, within a reasonable period, the area will no longer be referred to as a biosphere reserve which is part of the Network.
7. The Director-General of UNESCO notifies the State concerned of the decision of ICC.
8. Should a State wish to remove a biosphere reserve under its jurisdiction from the Network, it notifies the secretariat. This notification shall be transmitted to ICC for information. The area will then no longer be referred to as a biosphere reserve which is part of the Network.

Article 10 - Secretariat

1. UNESCO shall act as the secretariat of the Network and be responsible for its functioning and promotion. The secretariat shall facilitate communication and interaction among individual biosphere reserves and among experts. UNESCO shall also develop and maintain a worldwide accessible information system on biosphere reserves, to be linked to other relevant initiatives.
2. In order to reinforce individual biosphere reserves and the functioning of the Network and sub-networks, UNESCO shall seek financial support from bilateral and multilateral sources.
3. The list of biosphere reserves forming part of the Network, their objectives and descriptive details, shall be updated, published and distributed by the secretariat periodically.

Literature cited

UNESCOMAB undated. Statutory framework of the world network of biosphere reserves. United Nations Man and the Biosphere Programme. Available at: https://www.environment.gov.za/sites/default/files/docs/statutory_framework.pdf