**Ecosystem Type: BARREN/ROCK AND SAND**

**Category: Biodiversity Conservation**

1. **Materials**

***Supplier*** – Sand dunes provide a habitat that supports a diverse group of species, such as clonal plants (Yu, Dong, and Krusi, 2004). These ecosystems support a wide range of species because they have microhabitats with unique characteristics fit for only certain animals and plants (Robinson and Seely, 1980).

***Driver*** – not applicable

***Demander*** – not applicable

1. **Nutrition**

***Supplier*** – not applicable

***Driver*** -not applicable

***Demander*** - not applicable

1. **Energy**

***Supplier*** – not applicable

***Driver*** – not applicable

***Demander*** – not applicable

1. **Mediation of Waste, Toxics, and Other Nuisances**

***Supplier*** – Desert soils have the ability to immobilize nitrogen for plant use (Peterjohn and Schlesinger, 1990), which helps support biodiversity of species.

***Driver*** – not applicable

***Demander*** – not applicable

1. **Mediation of Flows**

***Supplier*** – Desert plants have learned to adapt to long periods of drought, so they can extend the length that water flows through and stays within their roots (Evans and Thames, 1981). The adaptation is unique to a group of plants that are important for supporting biodiversity.

***Driver*** – not applicable

***Demander*** – not applicable

1. **Maintenance of Physical, Chemical, and Biological Indicators**

***Supplier*** – The ability of sand to accumulate carbon creates an environment that supports the biodiversity of species (Yuan, Maun, and Hopkins, 1993).

***Driver*** – not applicable

***Demander*** – not applicable

1. **Spiritual, Symbolic, Religious, and Social Experiences**

***Supplier*** – There are people that believe beaches need to be preserved because of the environmental value they bring to adjacent ecosystems (James, 2000). A recent study found that beachgoers are concerned for the wellbeing of sandy beaches because they care about the biodiversity of these ecosystems (Lucrezi and van der Walt, 2016).

***Driver*** – not applicable

***Demander*** – not applicable

1. **Physical and Intellectual Interactions w/ Biota, Ecosystems, and Land/Seascapes**

***Supplier*** – Humans can physically interact with sand dunes through activities like hiking, off-roading (Vollmer et al., 1977), and observing wildlife; however, this is having an impact on the assemblage of small benthic invertebrate species (Gheskiere et al., 2005).

***Driver*** – not applicable

***Demander*** - not applicable

**Sources:**

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James, R.J. (2000) From beaches to beach environments: linking the ecology, human-use and management of beaches in Australia. *Ocean & Coastal Management, 43*(6), 495-514. <https://doi.org/10.1016/S0964-5691(00)00040-5>. [abstract only]

Lucrezi, S. and va der Walt, M.F. (2016) Beachgoers’ perceptions of sandy beach conditions: demographic and attitudinal influences, and the implications for beach ecosystem management. *Journal of Coastal Conservation, 20*(1), 81-96. <https://doi.org/10.1007/s11852-015-0419-3>. [abstract only]

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Vollmer, A.T. et al. (1977) The impact of off-road vehicles on a desert ecosystem. *Environmental Management, 1*(2), 115-129. <https://doi.org/10.1007/BF01866102>. [abstract only]

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