

## Book Review:

### Plant Life of a Desert Archipelago: Flora of the Sonoran Islands in the Gulf of California

*Richard Stephen Felger and Benjamin Theodore Wilder in collaboration with Humberto Romero-Morales. The University of Arizona Press. (cloth) ISBN 978-0-8165-0243-1*

Reviewed by Amy Eisenberg, Ph.D.

*Plant Life of a Desert Archipelago: Flora of the Sonoran Islands in the Gulf of California* is a richly collaborative work of art and botanical science with the expertise of the Comcaac people Seri. Benjamin Theodore Wilder's strikingly beautiful front jacket color photo of Isla Cholludo with its cardón, *Pachycereus pringlei* (S. Watson) Britton & Rose Cactaceae, organ pipe cacti, *Stenocereus thurberi* (Elgelm.) Buxbaum Cactaceae, and Isla Tiburón in the background to the north, is stunning. The handsome back jacket color photo is of the morning fog enshrouding dwarf cardón on Isla San Pedro Mártir.

The floristically unique and diverse desert archipelagos in the Gulf of California are among the world's most well preserved ecosystems supporting more than 400 plant species. *Plant Life of a Desert Archipelago* is the primary descriptive culmination of many decades of exploration by botanist Richard Felger, recent investigator Benjamin Wilder, and Comcaac plant expert, Humberto Romero-Morales. This collective ethnoecological work features plants, people, culture, and environment. Thousands of plants were examined, collected, and accurately described and displayed in this volume of more than 400 exquisitely rendered botanical illustrations and color photographs.

The indigenous coastal-desert Comcaac people, who have subsisted on marine and terrestrial life for centuries, shared their extensive knowledge of plants, communities, and language within their ethnosphere. Author Richard Felger, Ph.D., is a research scientist with

the University of Arizona Herbarium and the Sky Island Alliance in Tucson, Arizona. Benjamin Wilder is a Ph.D. student of Botany and Plant Sciences at the University of California, Riverside, and Humberto Romero-Morales is a conservationist of Isla Tiburón, where he is actively engaged in leading eradication efforts of non-native, invasive species. From an early age, Humberto's mother taught him of the Comcaac cultural significance and knowledge of their desert plants.

The Foreword by Exequiel Ezcurra opens with a passage from *The Voyage of the Beagle* (1860) by Charles Darwin on page xi, "The archipelago is a little world within itself, or rather a satellite attached to America..." One of the most unspoiled archipelagos in our world is in the Gulf of California. Island biogeography—and specifically these Gulf Islands—were at the root of the emerging scientific field of conservation biology. Richard Felger recognized the importance of indigenous influences in the gulf and worked with the Comcaac people to understand their profoundly reciprocal human-island resource interactions. In 1985, Felger and Mary Beck Moser published the extraordinary ethnobotanical treatise entitled, *People of the Desert and Sea: Ethnobotany of the Seri Indians*.

Felger meticulously reviewed all existing herbarium records and collections in the preparation of this work. This flora is of fundamental importance for researchers conducting investigations in the region. Mexico is in desperate need of these studies in order

to better manage and preserve its natural and cultural heritage. “The mystery of mysteries” are Darwin’s words that describe the fascinating evolutionary history of island ecosystems. Indeed, the team was thoroughly captivated with a great sense of awe and wonder during their explorations of the plants of these magnificent desert islands. Their efforts were enhanced by generous funding provided by several institutions but principally that of the Lucille and David Packard Foundation and the Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (CONABIO). Wonderfully skilled botanical illustrators and photographers are acknowledged and cited in this superb work as well as archives, herbaria and institutions that contributed their plant specimens and scientific knowledge.

The introduction presents the Midriff Islands of the Gulf of California. The isolated desert islands in the central part of the Gulf of California between latitudes 28°20’ and 29°40’ exhibit a high level of endemism in the mammalian and reptilian fauna while the flora of each respective island is unique. The Comcaac and their ancestors established an existence from our world’s best-preserved archipelago and the Sonoran mainland for thousands of years. The present work is focused on the Sonoran Islands from which the researchers built upon the rich local knowledge of the Comcaac and more than a century of scientific investigations to better understand its ecology and botanical diversity. In the chapter “Geological History and Island Physiography” both elements are described with the use of excellent accompanying satellite imagery and maps.

“Vegetation communities” describes the distinctive morphology of the vegetation as a “sarcocaulous desert” because of the many succulents and semi-succulents with exaggerated stem diameters. The region displays a complex topography and array of microenvironments with diverse biotic communities.

The major island communities are discussed in great depth: Seagrass meadow, Sea cliffs, Guano areas, Beach dunes, Littoral scrub including Mangrove scrub, and Salt scrub. Desertscrub encompasses Coast scrub, Creosote scrub, Mixed desertscrub, Cactus scrub, Xeroriparian desertscrub, and Riparian *tinajas* (a local term for waterholes). In this markedly arid region, *tinajas* support rare freshwater wetland communities and, however small, these perennial water sources have been traditionally essential to the survival of the Comcaac. Desertscrub-thornscrub ecotone comprises canyons and exposed slopes and ridges.

“Historical Human Use and Influence” (within the introduction) discusses the long histories of human presence in the region. The meager supply of freshwater strongly influenced the number of people able to live in any given locality. The Comcaac people ranged over an expanse of desert lands from Guaymas northward along the Sonoran coast to the archipelago as cross-Gulf of California voyages were made to the Baja Peninsula and adjacent islands. The Comcaac recognize six major groups that speak three distinct Comcaac dialects. These groups lived primarily as hunter-gatherers and seafarers as permanent settlements were generally not feasible due to the extreme aridity and scarcity of freshwater. Comcaac people developed diverse uses and sustenance from the local flora and fauna, and have retained this profound knowledge and understanding.

Spanish colonization was a long and bloody history that perpetuated into the early part of the twentieth century. For the Comcaac, who were targets of centuries of abuse by Spanish colonial forces and then Mexican military violence, Isla Tiburón served as a refuge. Its isolation and scarcity of freshwater hindered invading military pursuit with horses. Against all odds, the Comcaac persisted due to their resiliency as a people. Since the middle

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of the twentieth century, they have settled in villages on the mainland and their population has steadily increased while maintaining a strong interest in their plants and the natural and cultural heritage of their region.

In the section “Non-Native and Invasive Species” the authors note that the islands in the Gulf of California contain some of the most undisturbed regions of the Sonoran Desert and the low number of non-native species is a testament to this fact. However, no non-native species poses a greater threat to the island ecosystems than oot iconce, or buffelgrass (*Cenchrus ciliaris* L. Poaceae). The massive conversion of native Sonoran desertscrub and thornscrub to dominance by this highly invasive member of the Poaceae (grass family), which was originally introduced as cattle forage has transformed vast areas into an African grassland-like landscape. Seeds of this perennial grass are enclosed within a bur-like fascicle that may lodge into fur and feathers. Humans are also unwitting vectors of this prolific monocultural species of great concern in many arid lands across the world as it thrives after fire and outcompetes native plants. Comcaac youth under the direction of Humberto Romero-Morales and Benjamin Theodore Wilder have worked diligently eradicating one of the world’s most notorious invasive species on Isla Tiburón; however, continued monitoring is essential.

Isla Tiburón has always been part of the Comcaac traditional territory, yet only in 1975 did the President of Mexico decree it as the communal property of the Comcaac, and declared the coastal waters of the island for their exclusive use. The Gulf of California islands were declared an Area de Protección de Flora y Fauna in 1978, and in 1995 all were designated by UNESCO as a Biosphere Reserve and registered in the Man and the Biosphere Programme. In 2005, the Gulf of California and its islands were granted World Heritage status by UNESCO as an acknowledgement of

their unique biodiversity. Today, Isla Tiburón and its surrounding sea officially remains the territory of the Comcaac people.

I am truly delighted to review with praise this wonderfully extensive work that features chapter and sections titled “The Islands and Their Vegetation,” “Island Diversity,” “Botanical Explorations on the Sonoran Islands: Collectors, Associates, and Selected Personalities,” with a careful and botanically accurate assessment of “The Flora,” and concluding with Part IV “Gazetteer” and its appendices: “Checklist of the Flora of the Sonoran Islands,” “Species Mutually Absent from Isla Tiburón and Mainland Sonora,” and “Botanical Name Changes.” May the authors and the Comcaac people go from strength to strength!



*photo by John Amato*

### About the author

Amy Eisenberg is an ethnoecologist, botanist, scientific artist, and organic sustainable agriculturist and agroforester who conducts collaborative research with indigenous peoples of Asia, the Pacific, South America, and North America. “Aymara Indian Perspectives on Development in the Andes” is her new book; a collaborative project with the Aymara people. She became an Associate Scholar with the Center for World Indigenous Studies in 2006 while serving as an International Expert at Jishou University’s Research Institute of Anthropology and Ethnology in Xiangxi Autonomous Prefecture in Hunan with ethnic minority graduate students of China. She conducted participatory research with the Kam people of China through the UN Permanent Forum on Indigenous Issues and UNESCO - Local and Indigenous Knowledge Systems. Photos of her work by professional photographer John Amato, RN can be viewed at: [www.pbase.com/jamato8](http://www.pbase.com/jamato8)

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