

**Creating Defensible Spaces in an Indefensible Ecosystem.** Jonathan C. Hall, The Land Conservancy of San Luis Obispo County, San Luis Obispo, CA, USA. [jonh@lcslo.org](mailto:jonh@lcslo.org).

The Guadalupe Nipomo Dunes Complex (GNDC), located in both San Luis Obispo and Santa Barbara Counties, is the largest relatively intact coastal dune tract in California. A coalition of agencies, non-profit organizations, businesses, and landowners, called the Dunes Collaborative, have been working to conserve the most significant resources of the GNDC by removing exotic plants that are invading the most pristine areas. Over 50% of this dune system is made up of coastal dune scrub habitat, which is being degraded by perennial veldtgrass (*Ehrharta calycina*). This weed species is converting the natural shrub dominated ecosystem into a grassland and is so wide spread, long-term strategies for management are the only viable options. For over a decade, management strategies in the GNDC have been built around the theory of biotic resistance, which hypothesizes that species diverse environments are more resistant to invasive species. This concept is promoted as a valuable foundation for sustainable, long-term weed management.

After 10 years of perennial veldtgrass control, monitoring results showed that the Dunes Collaborative has failed to meet their management objective of a restored coastal dune scrub habitat with natural resistance to invasive species. Utilizing a conceptual model looking at attributes of the invasive species, ecosystem invaded, and environmental conditions, the Dunes Collaborative has changed their management strategy and approach.

Coastal dune scrub habitat is typified by perennial shrub species intermixed with patches of bare ground. This bare ground provides valuable open spaces for native annual plants to flourish and provides a majority of the ecosystem's species richness. These natural open spaces are quickly invaded when perennial veldtgrass seeds are wind dispersed from neighboring infestations. The structure of this ecosystem lends itself to the theory of biotic acceptance, an opposing theory to the theory of biotic resistance. In the theory of biotic acceptance, some natural ecosystems tend to accommodate the establishment and coexistence of introduced species despite the presence and abundance of native species.

Based on the theory of biotic acceptance, the new management strategy to conserve the most significant resources of the GNDC focuses on building defensible spaces as buffers around habitat areas identified as critical to preserving and promoting biodiversity. These defensible spaces are based on topography and predominant wind direction to minimize weed seedbank introductions from neighboring infestations.