

DRAFT - Walk the Farm 2009 Speakers Panel

Conservation target descriptions adapted from Stanford University publications

Speaker: Dr. Don Kennedy

Kennedy served as president of Stanford from 1980 to 1992. From 2000 until 2008, he was editor-in-chief of *Science*, the prestigious weekly published by the American Association for the Advancement of Science (AAAS).

Trained as a biologist, Kennedy has become an expert in environmental problems related to major land-use changes, economically driven alterations in agricultural practice, global climate change and the development of regulatory practices.

Conservation target: Avifauna in urbanized landscapes

Urban habitats favor species that are less affected by toxic substances flowing through cities, that are better able to adapt to artificial light, to communicate over the noise of traffic and automation, to breed successfully on human built structures, and to rebound after city council decisions to decimate their populations. As more of the natural habitat of Earth is destroyed, urban birds will become more "typical" of our avifauna. As tongue-in-cheek evolutionists claim, birds may, indeed, be feathered dinosaurs. Many species of birds may soon follow the dinosaurs into extinction, but it seems likely that urban birds will be around as long as there are people to build cities.

Speaker: Dr. Alan Launer

Alan Launer was associated with Paul Ehrlich's research group at Stanford from 1978 to 1981, and has been with the Stanford Management Company since 1989. His current research activities focus primarily on the conservation biology of organisms inhabiting human-modified landscapes.

His projects with Stanford include development of a habitat conservation plan covering several federally listed species on the Stanford campus, study of the population of California tiger salamanders (*Ambystoma californiense*) that reproduces at Lagunita, investigations on the biotic impacts of non-native fishes present in the San Francisquito Creek drainage, and determination of general university land use constraints concerning red-legged frogs (*Rana aurora draytonii*) and other species of conservation concern.

Conservation target: Burn zone at the Stanford Foothills (Dish property)

A low-intensity fire burned a small area of non-native annual grassland at the Stanford Foothills in the summer of 2008. Most grassland ecosystems experience some periodic burns, which reduce accumulated dead plant material, redistribute nutrients, and contribute to community diversity. Altering burn regimes through management and suppression can affect habitat characteristics.

*Conservation target: California Red-Legged Frog (*Rana aurora draytonii*)*

*Loss of habitat, the introduction of non-native species, the wide-spread use of biocides and fertilizers, and the spread of pathogens are current major threats to red-legged frog survival and have lead to widespread declines. *Rana aurora draytonii* was listed as a threatened species by the U.S. Fish and Wildlife Service in 1996.*

Speaker: Ryan Navratil

Ryan Navratil is the former director of the San Francisquito Watershed Council and is actively involved in habitat conservation projects on Stanford's campus. His current projects focus on management planning in agricultural and urban landscapes.

Conservation target: There has been a long-term decline of steelhead populations in the last century leading to the listing of Central California Coast (CCC) steelhead as threatened under the ESA in 1997.

Degradation of spawning streams has been cited as a main factor in their decline. Dams and other water migration barriers, water diversions, removal of riparian vegetation, decreased water quantity and quality and the presence of non-native fish all affect the quality of habitat in steelhead spawning streams. Pollution is also a threat to salmonids, including steelhead. The presence of non-native species, including non-local forms of rainbow trout, can also threaten steelhead populations.

Speaker: Dr. Peter Alagona

Dr. Alagona is Assistant Professor of History and Environmental Studies at the University of California at Santa Barbara. He is an environmental historian and historian of science with additional interests and training in ecology, geography, and science and technology studies.

*Conservation target: Habitat Conservation Planning
Habitat Conservation Plans ("HCPs") developed out of the 1983 extension of the Endangered Species Act, which authorizes states, local governments, and private landowners to apply for an Incidental Take Permit for otherwise lawful activities that may harm listed species or their habitats. To obtain a permit, an applicant must submit a Habitat Conservation Plan (HCP) outlining what he or she will do to "minimize and mitigate" the impact of the permitted take on the listed species. The principle underlying the exemption from the ESA is that some individuals of a species or portions of their habitat may be expendable over the short term, as long as enough protection is provided to ensure the long term recovery of the species.*

Speaker: Jon Christensen

Christensen is Associate Director of Spatial History Project of the Bill Lane Center for the Study of the North American West at Stanford University. The focus of his current work is a history of ideas, narratives, science, and practices of conservation of a species in time and space with a specific emphasis on the endangered Bay Checkerspot Butterfly.

Christiansen, who has worked as a freelance environmental journalist for nearly 20 years, has published work in *The New York Times*, *The High Country News*, and many other newspapers, magazines, journals, and radio and television shows.

*Conservation target: Serpentine Grassland / Bay Checkerspot Butterfly
The Bay checkerspot butterfly has been studied annually by Professor Paul Ehrlich's group at Stanford since 1960. This threatened butterfly subspecies formerly had two relatively robust populations at Stanford (a third "population" has been recorded in the literature [population "G"], but never supported butterflies for more than a few years). The Bay checkerspot butterfly has not been observed at Stanford since 1997 (despite hundreds of hours spent annually looking for them).*

The serpentine grasslands at Stanford are designated as Critical Habitat for the Bay checkerspot butterfly. The Critical Habitat unit encompassing the serpentine grasslands at Stanford is approximately 330 acres in extent.

Speaker: Dr. Carol Boggs

Since 2006, Dr. Boggs has been the Bing Director of the Program in Human Biology at Stanford University exploring how environmental variation affects life history traits, population structure and dynamics, and species interactions in ecological and evolutionary time, using Lepidoptera. Her current interests include (1) how resource allocation strategies interact with foraging and life history in variable environments to affect fitness and population dynamics; (2) the ecological and evolutionary dynamics of small populations, including population re-introductions; and (3) invasion biology, particularly the evolutionary and ecological effects of non-native species' invasion into co-evolved systems.

*Conservation target: Species of Lepidoptera, specifically Checkerspot Butterflies
Changes in resource allocation, particularly related to foraging, survival, and reproduction, are affected by a number of biotic and abiotic factors. Understanding resource allocation and its interaction with different life history traits is a crucial component to Checkerspot Butterfly conservation.*

Speaker: Tim Bonebrake

As a PhD candidate at Stanford, Bonebrake's research focuses on the effects of climate change and habitat loss on the persistence of populations. Specifically, three checkerspot butterflies (*Chlosyne lacinia*, *Euphydryas gillettii*, and *Euphydryas editha*) serve as his model organisms for exploring these anthropogenic processes and their effects on populations.

Bonebrake has been actively involved in efforts to restore butterfly populations through recovery of critical Serpentine Grassland habitat in the Peninsula.

Conservation target: Migratory invertebrates (butterflies)

Bay Area butterflies tend to exist as metapopulations, or sets of populations that have independent fluctuations in numbers but are connected by some migration, hence both genetic exchange and possibility of re-colonization if a population goes extinct.

Speaker: Dr. Philippe Cohen

Since 1993, Dr. Cohen has been the Administrative Director of Stanford's Jasper Ridge Biological Preserve. The 1,189-acre preserve provides a natural laboratory for researchers from all over the world, educational experiences to students and docent-led visitors, and refuge to native plants and animals. In addition to facilitating first-rate research, this highly accessible field station provides undergraduate educational experiences and plays an active role in educating the general public.

Conservation target: Serpentine Grassland

There are two main areas of serpentine grassland at Stanford, both located in the Jasper Ridge Biological Preserve. These two areas are of limited extent, and the total acreage of serpentine grassland at Stanford is less than 25 acres. These grasslands have not been managed specifically to promote native biodiversity; indeed a "hands off" management policy has been in effect at the Preserve for more than 25 years. This policy was implemented in order to ensure that the inevitable vagaries of multi-year management activities did not unnecessarily affect the long-term research activities at the site. The grasslands do, however, still support an array of native plant and animal species, including California plantain, goldfields, serpentine linanthus, common linanthus, red maids, purple needlegrass, California man-root, California buttercup, poison oak, blue-eyed grass, terrestrial brodiaea, blue dicks, Ithuriel's spear, yarrow, and common muilla.

Conservation target: Chaparral vs. Grassland habitat

Chaparral and scrub at Stanford provide habitat for a diversity of terrestrial wildlife. Amphibians include western toad and Pacific treefrog. Reptiles include western fence lizard, gopher snake, western racer, northern Pacific rattlesnake, and western whiptails. Coast horned lizards have not been recorded at Stanford for several decades, but are present in the chaparral located about 10 kilometers south of the University.

Speaker: Bill Anderegg

Bill Anderegg is a first year PhD student in Biology. He has conducted research in Yellowstone, tropical Mexico, Pacific islands and California foothills. He is interested in how climate change impacts humans and nature. His honors thesis at Stanford University has helped to catalog the changes in avian diversity at Jasper Ridge Biological Preserve since 1971.

Conservation target: Neotropical migratory birds

Many local populations of birds are in decline, but a disproportionately high number of neotropical migratory birds are disappearing, suggesting that changes elsewhere in the world maybe the cause. Neotropical migrants typically spend the winter anywhere between Mexico and Brazil, and their absence here could be caused by disruptions in their wintering grounds or migratory pathways, due to deforestation and human development.

Speaker: Dr. Scott Loarie

Dr. Loarie is a postdoctoral fellow at the Carnegie Institute of Washington at Stanford University with a current focus on ecosystem responses to climate change. After receiving his PhD from Duke University in 2008, Loarie received significant attention for his work describing the potential response of California's endemic flora to changes in climate.

Conservation target: Whole ecosystems endemic to California

The endemic plant communities in California appear to be extremely vulnerable to changes in climate, due to limits in dispersal, high sensitivity to temperature or moisture regimes, and pressure from non-native invaders. Several refugia scattered throughout the state provide valuable "species banks" that make for compelling units of conservation, since these refugia are likely to preserve California's native ecosystems as the global climate changes.

Speaker: Dr. Heather Tallis

Tallis is working with a team from Stanford, WWF, TNC and other universities to develop a set of tools to model and map ecosystem service values in given landscapes. Tallis' research interests include marine ecology, ecosystem science, biogeochemistry, and traditional knowledge systems. She has explored resource management options with Penan communities in Borneo, villagers in Cambodia, timber and aquaculture industries in Washington (USA) and a hydropower company in New Zealand. Her academic research has focused on the biological consequences of nutrient and carbon flows in the open ocean, coastal zone, rivers and forests. Tallis received her Ph.D. from the University of Washington and has won awards from Rotary International, the Ford Foundation and the National Fish and Wildlife Foundation, among others.

Conservation target: Natural Capital

Traditional ways of calculating Gross Domestic Products consistently omit the trillions of dollars of benefits that nature provides, and on which our lives depend. The Natural Capital Project, a new and unprecedented partnership between The Woods Institute for the Environment at Stanford University, The Nature Conservancy, and World Wildlife Fund. The Natural Capital Project, launched 31 October 2006 in Washington, D.C., aspires to provide maps of nature's services, assess their values in economic and other terms, and - for the first time on any significant scale - incorporate those values into resource decisions. Achieving this vision requires new scientific methods, new financial instruments, and new governmental policies.