

John E. Keeley – *Research Ecologist, USGS Western Ecological Research Center*

- Wild land-Urban interface is the most significant landscape for fire reduction
- People make fires a disaster instead of a natural phenomenon
- Ways to stop fire from reaching urban flowcharts include:
 - Fuel treatment
 - Zoning planning
 - Thinking about fire from standpoint of earthquakes and flooding – managing where we put homes
 - Urban structure and landscaping
- Media expresses fires in terms of forests may not relate to Mediterranean regions dominated by non-forested landscapes
- Mediterranean climate of winter rains and summer droughts leads to fire hazards
 - Fire climate has predictable and unique biodiversity
 - Some regions have fire dependent biota (California) and others do not (Mediterranean basin and Chile)
- Global Warming impacts
 - Frequency of megafires has increased
 - Associated with high velocity winds and low humidity
 - Fuel moisture does not determine fire severity (wind does)
 - Frequency and severity are negatively correlated
 - Decline in average palmer drought severity index
 - Warmer temperature leads to higher fire risk
- Southern California is on a trajectory for more and more fires because of the increased population, the trajectory of non-native grasslands, and offshore winds
- Fuel break: modify long strips of vegetation – get rid of all native vegetation and replace with corridors of invasive plants
 - Only affective for stopping fire if accessed by fire fighters

John Randal – *Ph.D., Director, Global Invasive Species Team, The Nature Conservancy*

- Threats to biodiversity include developments, fragments, climate change, invasion
- Invasive species are non-native, they spread following introduction and cause economic and/or environmental damage
 - Examples include the emerald ash borer beetle, sudden oak death, cape ivy, caulerpa taxifolia, buffalo grass, Monterey pine, and Geraldton wax
- Pristine is not a protection against invasion
- Focus should be on prevention on new invaders
 - Pathways for invaders include trade, travel and airports
 - Need to work with industry to restrict imports
- Sometimes overreact about invasive species
- Error on the side of precaution with invasive species
- Nursery trade effective in South Africa with cooperation of 95% of nurseries

Stephanie Pincetl – *Ph.D., Director, UCLA Center for Sustainable Urban Systems*

- Where materiality comes from and supply chain impacts
 - Imported water
 - Grew in a period of incredible abundance in Los Angeles (cheap timber, concrete, gasoline and land)
- Question of vegetation is coupled with water
 - Density of greenness remains the same with drought restrictions
 - Price has no effect on high water users because wealthier people use more water
- Mapping waste flows leads to a geospatial understanding of waste transitions
- Urban diversity changes over time as number of species increases
- Are we creating a new ecosystem?
 - Removal of topsoil, changed topography, changed drainage
 - What kind of nature is this?
- Real tradeoffs between water use and shade because we did not think about what tree we were planting
- LA criticized for its small open space per capita
 - LA is the densest city in US
 - A lot of private property
 - Suburban idea of parks (where do you put these? /are they appropriate?)
- Question: All land uses down 3% in LA between 2000 and 2010...is this a good thing because of water? Does the amount of energy and cost of planting trees outweigh the benefit?
 - Answer: It depends on the tree. Need to consider bio-eco-social climate of a space. This is part of a new sustainability science so there is much uncertainty. Sustainability is not one-size-fits-all.
- Question: What trees should we be planting? What are some alternatives?
 - Answer: We should not assume everyone is willing to take care of trees. We should be prepared to provide neighborhood appropriate cooling and cannot tell people they have to have a tree. Talk to the people and find out what trees they want. Water recycling is a 20-30-40 year infrastructure problem

Andy Lipkis – Founder and President, TreePeople

- Do not just plant trees, train the community to care for them as well
- Canopy cover in LA is exact footprint in inverse proportions between low and high income
- Financing green infrastructure
 - Single purpose development is much more expensive
 - Soil made from what falls out of trees
 - Bio-mimicking
 - Integrated planning and funding
 - Rain harvesting landscapes by urban youth projects
 - Using school yards for storm water capture, put in green space
 - LA storm water tax

Bongani Mnisi – Regional Manager, Biodiversity Management, City of Cape Town

- Biodiversity does not translate well to lay people

- Biodiversity gives foundation for economic growth, social development, and human well-being
- Biodiversity is extremely important to tourism in Cape Town because it contains 18% of the South African species
- Advising land private landowners to create a conservation stewardship plan instead of displacing them to create a national park
- Teaching the locals about native/nonnative plants is a good skill for job creation
 - Education allows them to understand and lead their own sustainability projects
- A lack of open natural space will lead to a decline in health
- Removing invasive species creates jobs
- Make the natural value of a system known so development is not desirable
- Nature reserves: any space counts if any plant or animal can use it
- People get interested in conservation by just being out in nature
- Build communities living with biodiversity instead of just houses
- Question: Where are the invasive species coming from?
 - Answer: Mostly Australia. South African species can be invasive as well.

Karen Wise – *Vice President, Education and Exhibits, Natural History Museum of Los Angeles County*

- Opportunity for a garden project at Exposition Park that allows documentation of biodiversity
- Urban kids need/want natural space to play
- Embraces altered nature, does not recall the past
- Park can serve as a commons and a resource
- Need to connect people with resources rather than “off the shelf designs”

Raymond Sauvajot – *Ph.D., Natural Resource Program Chief, U.S. National Park Service, Pacific West Region*

- Using city resources to address protecting open space, natural resource management and biodiversity
- Identifying natural areas that we can ensure make it to the future unimpaired for future generations
- Parks and cities need science
 - Understand dynamic and changing ecosystem
 - Consequences of our actions are uncertain
 - Legislation is required to seek science
 - Parks for science and science for parks (places for scientists to work and demonstrates to public what these areas are teaching us)
 - Building relationships
- The role of the National Park Service depends on the science and is subject to public scrutiny and must be supported, understood, and embraced by the public
- Large parks provide resource opportunities
- Science needs
 - Climate change is recognized and a big challenge
 - Maintain viability and biodiversity in a changing climate

- Facing urban challenges
- Identify the species of greatest concern
- Land use change
- Habitat fragmentation
- Understand consequences of mitigation
- Fire ecology and management
- Ecological restoration
- Balancing biodiversity, sustainability and livable cities
- Lots of rare and sensitive species
- Understand health of ecosystem
- Monitoring
- Cities provide opportunities to meet challenges
- Strategy
 - Science
 - Adaptation
 - Mitigation
 - Communication

General Discussion

- Need landowner education: present the option of using natives for fire prevention, innovation landscape architecture can use native plants aesthetically
- Need risk assessment models for invasive species
- Need to get the public used to the idea of a native aesthetic
- What belongs and what does not belong is a very personal question of values
- How far do we define native? (local, regional, national)