MON-C03
Blank Slate Landscapes:
Regenerative Undoing and Ecological Infill

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There are many types of post-industrial/development landscapes that present exciting opportunities to reintroduce a high level of ecological integrity and authenticity in unique urban and natural contexts. Two ecological design firms describe their approaches to consulting science to engender successful reclamation and restoration projects that bring incredible diversity to unlikely landscapes.

Learning Objectives:
- Participants will gain a better understanding of the scientific ecological design process and useful skills inherent to thorough assessment and evidence-based design.
- Participants will gain a sense of the possibilities for bringing a high level of biodiversity and ecological integrity even into small sites, urban contexts, and formerly developed landscapes.
- Participants will learn means for measuring ecological benefits, diversity and progress.
- Participants will how to use hydrology, reference ecologies, and ecological performance metrics as drivers of ecological design.
I. Introduction
   a. Presenters introduce themselves and firms’ approach
      i. David Yocca, Conservation Design Forum
      ii. Jessica Neafsey, Rana Creek Design
   b. Introduction of successful precedent of designing for high level of biodiversity and ecological integrity (the whole greater than the sum of its parts)
      i. Chicago City Hall Living Roof
   c. Learning objectives
      1. Participants will gain a better understanding of two firms’ approach to the ecological design process
      2. Participants will gain a sense of the possibilities and challenges involved with aiming to design for a high level of biodiversity and ecological integrity in a variety of landscapes, including small, highly urban, and reclaimed sites
      3. Participants will learn process for using hydrology, reference ecologies, and ecological performance metrics, and visualization as key methods of ecological design
      4. Participants will learn means for measuring ecological benefits, diversity and performance
   d. What is ecological design?
      i. Originally defined as “any form of design that minimizes environmentally destructive impacts by integrating itself with living processes.”
      ii. How we define ecological design today: not satisfied with merely being less bad, causing less destruction, or with goals for zero waste, zero emissions, zero potable water for non-potable use; but we are moving towards regenerative design
      iii. Urgency of ecological design
      iv. Key principles of ecological design, informed by science, that we use on a daily basis
      v. what it’s NOT

II. Ecological Infill
   a. An approach to landscape design and restoration that wishes to, like urban infill, “rededicate” and reclaim land in urban or post-developed landscapes to a certain level of biological diversity, even if we are starting from virtually nothing. Ecological infill can happen on the
“spine of the continent,” or in a dense city neighborhood. Beyond simply using native plants in landscape design, beyond merely connecting the green dots, we are discussing projects that aimed to reintroduce a high level of ecological integrity and authenticity in both likely and perhaps unlikely candidate sites, including the following projects.

b. Introduction of case studies

i. Montrose Point Bird Sanctuary Project: Montrose Point is part of Chicago’s lakefront park system, is renowned as a site that attracts and provides respite for an incredibly diverse array of migratory birds, and is cherished by birders and other nature enthusiasts. The site is all made land (landfill), and designed originally by Alfred Caldwell. After serving a time as a military facility, the site was returned to public use, and more recently naturalized. It has become overgrown with invasive woody and herbaceous plants, and is also subject to intense use, negatively impacting the paths and landscapes. CDF was commissioned to lead a community process to develop a Master Plan to renovate the physical features of the site AND to put in place a long-term natural areas management plan to guide the restoration and stewardship of the landscape in a way that supports and actually enhances the habitat and public use/education qualities of the site.

ii. Openlands Lakeshore Preserve at Fort Sheridan: Part of a military installation for more than 110 years, Openlands created a 77 acre preserve that includes a one-mile stretch of extremely rare and authentic coastal bluff and ravine habitat found nowhere else in the state of Illinois. CDF was commissioned to do a feasibility study to evaluate the property’s ecological value and condition, formulate a vision for its most beneficial usage, and specify ecological restoration and long-term stewardship opportunities.

iii. San Clemente Dam Removal and Carmel River Reroute Project: Rana Creek is currently teamed with Granite Construction, URS and Kleinfelder on this epic dam removal project in Carmel Valley, California. Rana Creek was commissioned to consult on habitat restoration design (and implementation) for 62 acres of disturbance involving 9 different habitats and hydrologic zones.

iv. Rana Creek developed a master plan for the redevelopment of
a former Navy housing area intended as a community for disadvantaged female veterans. Habitat considerations based on scientific research of the federally endangered Palos Verdes Blue Butterfly (PVBB) strongly informed the design of the residential landscape. Rana Creek provided a landscape ecological site analysis and GIS for PVBB habitat as well as conceptual designs for site features including coastal sage scrub restoration gardens (incorporating PVBB host plants and ecological disturbance regimes), walking trails, a native plant nursery, a community garden, an edible streetscape, a contemplative garden, stormwater design and interpretive features. Key goals of the project were to optimize habitat and wellbeing for both the blue butterfly and future veteran residents looking to build skills and resources for reintegration into the workforce. This project was a collaboration with William McDonough + Partners for the Annenberg Foundation and completed in 2012.

v. Rana Creek assisted with conservation planning for the Hawaiian island of Lanai’s recovery from deforestation, a dwindling aquifer, a population of 16,000 invasive Axis Deer, invasive plant species, lack of local food supply, many threatened and endangered native and endemic species, on a small, rural island in the Pacific.

III. Ecological Design Process as it applies to Case Studies

i. Process: Use of reference ecologies/biotic communities

1. Eleven Montrose plant assemblages designed according to soil hydrology and subtle microtopographic variations
2. Use of floristic quality assessment of 13 distinct ecological zones at Openlands Lakeshore Preserve
3. San Clemente Dam Removal
   a. planting designs encompass three hydrologic zones (upland, riparian and wetland) and 9 reference ecosystems.
   b. Regulatory drivers and mitigation requirements
   c. Local genotype seed collected on and in close proximity to site.
   d. Plant species selection factors and challenges
e. Planting methods
f. Challenges
ii. Process: Use of reference disturbance regimes
   1. Blue Butterfly project consulted not only a reference biotic community, but a reference colonization phase (pioneer) and disturbance regime (fire) to ensure the prevalence of the two host plants for the endangered Palos Verdes Blue Butterfly in this neighborhood that contains remnant habitat in a highly urbanized context, primarily due to sleep, undevelopable slopes. Analysis at landscape ecological scale studied regional remnant PVBB habitat patches and possible linkage opportunities as well.

iii. Process: Use of reference habitat and species selection – variety of approaches – what does most current science say is best?
   1. Conserving “arena” vs “actors”
   2. Targeting top predator and/or highly interactive "ecosystem engineer" species like beaver
   3. San Clemente involves highly specialized designs for river channel construction to facilitate steelhead spawning, off-channel ephemeral ponds for California red-legged frog habitat. Restoration is intended to benefit overall watershed health and ecosystem function. Scope limited by regulatory focus on T + E species
   4. Lanai planning also had a strong T + E focus, which we tried to open up in various ways

iv. Process: Integrating climate change projections
   1. Lanai island
      a. Sea level rise
      b. Mauka to makai – from ridge to reef – elevational habitat shifts

v. Process: Use of reference hydrology
   1. Overview
   2. Bergman Slough- remnant wetland restoration
   3. Lanai – restoring hydrology via revegetation -- aquifer recharge and mesic reforestation (“the rain follows the forest”)
      a. Maui precedent - Art Madeiros’ success with
vi. Process: measuring performance – biodiversity, ecosystem function, integrity, resilience
   1. Techniques for establishing benchmarks and monitoring and measuring progress
   2. Measuring biodiversity
      a. Survival and cover vs species diversity, species richness
   3. Measuring downstream/watershed benefits
      a. Coffee Creek Watershed Preserve- stream quality improvements
   4. Measuring other kinds of ecological performance
vii. Process: creating long-term management and stewardship plans that include on-going monitoring to ensure system health and overall performance towards tangible metrics
   1. Use of aggregated floristic diversity
      a. Montrose
      b. Openlands
      c. San Clemente Dam removal
viii. Process: Visualization, Education + Interpretation – bringing educational and ecological research opportunities to highly urban environments
   1. Though in a dense urban context, and made entirely of fill, Montrose Point Bird Sanctuary attracts global visitors and is internationally recognized by ornithologists, for its diversity of migratory birds.
   2. Blue Butterflies incorporated a plan to include a native plant nursery for intended residents of the site: female veterans who are single mothers. It also included residential maintenance plans to ensure prime habitat for Lotus and Astragulus host plant species. Entymologyists regularly survey this site for PVBB.
   3. Visualizing invisible ecological relationships, promoting eco-literacy
   4. Integrating opportunities for Citizen science – Slide Ranch

IV. Opportunities for a new paradigm, higher standards