Session III. Lessons from Invasive Species and Pathogens
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Problem: Human activities are influencing processes of change, threatening our natural heritage by eliminating ability to adapt to changing environments.

Goal of conference: to synthesize scientific understanding of how humans are altering evolutionary processes and destroying ecosystems necessary to sustain biodiversity and to begin integrating evolutionary biology into conservation policy and practice as soon as possible.

Policy and management priorities for invasives and pathogens- working session highlights:

- Fund and promote prevention

- Reduce introductions of exotics and improve quarantine methods; establish “white list” approach with universal guidelines of what you can bring in vs current black list approach (too few species and too easily influenced by ag and horticultural interests)

- Institute eradication programs on public and private lands; apply approaches used successfully in other countries to engage public’s assistance

- Incorporate parasite issues into conservation policy and practice—small size but strong effect on ecosystem

- Educate public and encourage/fund scientific literacy at all ages; focus on integrating ecology and evolutionary biology
  - Link evolutionary ecology issues to public health and other issues that public can relate to

- Establish ways to speed up transfer and translation of scientific findings to policy makers and conservation practitioners to guide more effective conservation
  - e.g. on line information sharing tools, establishing science advisory committees to local, state and federal decision makers, and participation in existing conservation partnerships across disciplines, locally, regionally, nationally and internationally, on land and in marine realm.

- Increase access to and sharing of scientific data that can be used for conservation; increase links and scale of diversity data bases
Map evolutionary processes with climate change processes on to landscapes—if you can map it, you can conserve it (M Reynolds, TNC)

- Map endemism richness for species versus lineages—use to prioritize conservation—ID what other data we have or need to map biodiversity hotspots for protection

- Increase sampling to document change in genetic structure, presence of parasites; establish more documentation of shifting baselines
  - Increase funding for existing monitoring and evaluation efforts on public lands, restoration sites (riparian in particular), marine food webs and private lands to incorporate sampling;
  - Expand monitoring and sampling sites to already identified hotspots and projected hotspots with climate change.

- Increase incentives to encourage scientists to engage in policy and application
  - e.g., professional societies, statewide grants programs, academic fellowships for “applied” scientists and practitioners, field fellowships for academics, participation in existing on-the-ground and at-sea conservation partnerships, and developing on-line, real-time communication tools to encourage information flow between scientists, conservation practitioners, and policymakers
  - “pure” vs “applied” is a false dichotomy

- Institute (or join/expand existing) large scale, coordinated partnerships to protect ecological connectedness across gradients and large heterogeneous to successfully protect evolutionary hotspots

- In CA and West: ensure freshwater supplies for riparian corridors to support biodiversity conservation

- Establish incentives to help evolutionary biologists redirect and/or expand research priorities in the context of quickly changing global environment (e.g. climate change) to ensure applicable findings, models, tools and applications for timely use by public and private conservation practitioners
  - Participate in adaptive management cycle—engage practitioners in helping to develop research questions to ensure useful and practical research outputs and outcomes

**Concluding thoughts:**

- Al Gore’s next movie: Another Inconvenient Truth—*Invasive Species and Pathogens*

- To the Secretary of Treasury: There is no such thing as free trade.

- To Secretary of Defense: Fortress America (modeled after New Zealand)