Empowering Communities through Citizen Science

Giving voice to under-represented societies through the practice of participatory conservation and environmental monitoring

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Citizen Science (CS): An evolving concept

CS is not only...

• **Crowd sourcing** - with large numbers of people involved in data collection, and increasingly also in data analysis and interpretation

• **Private research** - with individual citizens in effect practicing science in their work (e.g., improving agricultural work through trial-and-error)
Citizen Science (CS): An evolving concept

But also...

- **Local participation** in the *process of research* and the *co-generation of knowledge*, also in *governance* (i.e. *decision-making*) and thus in *politics and power*
Presentation overview

• Context of our Citizen Science experiences
• The Big Picture: CS as partnership, not a tool
• Pastoralism and development in 21st Century
• Case studies from Central Asia & Tibet/China
  – Wildlife conservation through co-management
  – Research on the governance of common resources
  – eBilim mobile library & environmental monitoring
• Key lessons learned
Context of our CS experiences

- Who? Where?
  - Pastoral communities
  - In high mountains
  - In Central Asia
Context of our CS experiences

- Institutional contexts
  - Non-profit organization: Plateau Perspectives
  - Research Institute: MSRI, University of Central Asia
Context of our CS experiences

• Social-ecological systems
  – Mountain and grassland ecosystems
  – Agro-pastoralism and related livelihood matters
The Big Picture

- Citizen Science as **partnership**
  - Co-generation and interpretation of knowledge
  - Participatory approaches in development
  - Giving ‘voice’ to marginalized groups

- Broadening engagement, fostering inclusion & diversity
  - CS can support and enhance basic **research capacity**
  - CS can promote **sustainability, conservation**, and also **equitable development** through power sharing
The Big Picture

- Citizen Science as **partnership**
  - **Co-generation** and interpretation of knowledge
  - **Participatory** approaches in development
  - **Giving ‘voice’** to marginalized groups

*Local citizens and communities may serve as guardians and stewards of the environment*
Pastoralism: A globally marginalized livelihood

- Grasslands cover approximately 40% of the world’s land area
- Oft considered ‘irrational’ – yet pastoralism is an ecologically adaptive response to environmental uncertainty and fragility
Pastoralism: A globally marginalized livelihood

– In many countries, development programs seek to urbanize or sedentize people, to promote farming, to reduce livestock...

– Most often pastoralists do not participate in environmental monitoring schemes, nor in development planning, nor in decision-making, or in guiding their own future...
Addressing complex real-world problems with CS

• Citizen Science is well suited to address **complex real world problems**, aka ‘wicked problems’ (e.g., climate change, land degradation, energy and food security – none of which have simple cause-and-effect explanations or easy answers).

• **New ‘kinds of knowledge’ are required** – not only ‘systems’ (state) and ‘target’ (ideal) knowledge, but also ‘transformational’ knowledge (i.e., *how to get there*) (Hirsch-Hadorn 2008).

• Citizen Science can help us to better understand such complex realities.
Case Studies

• Tibetan Plateau / Western China
  1. Snow leopard conservation through co-management
• The Kyrgyz Republic
  2. ESPA project (governance of common pool resources)
  3. eBilim mobile library (access to information, awareness)
• Tajikistan & Kazakhstan
  4. Vision for UCA’s Learning Landscapes Initiative
Snow Leopard Conservation through Community Co-management

– Community driven, broad community ownership
– Increasing communication, building partnerships
– Improved management informed by current data and supported by multiple stakeholder groups
– Community involvement in wildlife monitoring (data collection) has led to local empowerment through ‘validation’ of their value/roles, with subsequent policy change

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Snow leopard have served as a tool (focal point) around which to develop more participatory approaches for conservation in the Tibetan plateau region.
China is now developing new legislation for its emerging system of national parks; this shall incorporate a landscape vision and also clarify the role of communities.
ESPA Project (Ecosystem Services for Poverty Alleviation) in Kyrgyzstan

- Community based governance of common pool resources
- Role of information – and access to it – for decision making under uncertainty
- Traditional vs ‘modern’ knowledge
ESPA Project (Ecosystem Services for Poverty Alleviation) in Kyrgyzstan

- Importance of who identifies research topics, who creates knowledge, who has access to information
- Significance of shared values and responsibilities to strengthen local ownership
Common resources include pasture and irrigation water

- Collection of locally relevant data and information
- Co-generation of contextualized knowledge
- Prevailing soviet mindsets ... need to develop new models
Common resources include pasture and irrigation water

- Opportunities for mutual learning and experience
- Development of strong and inclusive community based institutions
- Reduce asymmetries in communities through empowerment of small holders
Many environmental variables can be monitored through CS: Climate, hydrology, vegetation cover and phenology, etc.
eBilim Mobile Library & Citizen Science

– Access to knowledge and information
– Access to communication technologies
– Increased environmental awareness
– Participatory science education

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Innovative approaches are being developed to increase access to information, participation in research, and public environmental awareness.
UCA’s Learning Landscapes Initiative

- Basic research and long-term monitoring of the social-ecological systems
- Demonstration and experimentation sites
- Generating new knowledge for development in mountain areas
- Three UCA campus sites: Naryn, Khorog and Tekeli
LESSONS LEARNED

- The importance of ‘voice’ for all citizens
- Scientists need to listen, timeframes/speed
LESSONS LEARNED

- Long-term social and ecological monitoring is also critical, many opportunities for mutually beneficial partnerships
LESSONS LEARNED

- Many new complex challenges (e.g., climate change) may best be addressed with CS approaches, as these allow us to engage with and to benefit from a wide array of stakeholders from local communities.
Community Empowerment
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