Terms Related to Citizen Science

Citizen science includes a broad range of participation types and ways of collecting, analyzing, and using information. Other terms are used to describe specific contexts for how participants collect data, but all are related to the broadly recognized term of "citizen science" and share common elements. Notably, these terms and concepts have evolved over time, with sometimes shifting and overlapping meanings.

Although "citizen science" is the widely recognized and accepted term, it is not without controversy. For example, some might associate the word 'citizen' with national citizenship, which can be a sensitive subject. Indigenous groups also might not identify with the term 'citizen science'. In this document, "citizen" is equivalent to the concept of the "global citizen", which includes any person interested in participating in citizen science.

Below, we provide definitions and citations to some of the more widely accepted current definitions. These various terms and concepts stand in contrast to conventional approaches to resource management and scientific research, which tend to be top-down, without substantial community involvement.[1]

Civic Ecology – "A field of interdisciplinary study concerned with individual, community, and environmental outcomes of community-based environmental stewardship practices, and the interactions of such practices with people and other organisms, communities, governance institutions, and the ecosystems in which those practices take place" and "civic ecology practices are self-organizing stewardship initiatives, often taking place in cities".[2]

Civic Science – "Civic science alludes to a changing relationship between science, expert knowledge and citizens in democratic societies. In this perspective, citizens and the public can no longer be viewed as an exclusive domain for scientific experts and policy-makers only" with dimensions of civic science emphasizing public participation, enhancing representation of marginalized voices, and democratization of the scientific process.[3]

[1] Bäckstrand 2003, Berkes 2009, McKinley et al. 2013
[2] Krasny & Tidball 2012
[3] Bäckstrand 2003

Co-management – "The sharing of power and responsibility between the government and local resource users".[4] Two or more entities, each having legally established management responsibilities, working collaboratively to achieve mutually agreed upon, compatible objectives to protect, conserve, use, enhance, or restore natural and cultural resources (81 FR 4638).

Community-based Participatory Research – "A collaborative approach to research that equitably involves all partners in the research process and recognizes the strengths that each brings. CBPR begins with a research topic of importance to the community with the aim of combining knowledge and action for social change".[5] The term has most frequently been used in the context of community health.

Crowdsourcing – "the practice of obtaining information or input into a task or project by enlisting the services of a large number of people, either paid or unpaid" (OED 2017), either via the internet, or, in ecology and conservation, crowdsourcing can also involve field data.[6] A method to obtain needed services, ideas, or content by soliciting voluntary contributions from a group of individuals or organizations, especially from an online community.[1]

Knowledge Co-production – "The collaborative process of bringing a plurality of knowledge sources and types together to address a defined problem and build an integrated or systems-oriented understanding of that problem"[7], typically related to co-management of natural resources

Multi-party Monitoring – Engaging various stakeholders, community members, or other parties in monitoring, typically in the context of plan or projects. This process brings together people with different perspectives at various stages of the monitoring process, but particularly in identifying monitoring questions and methods to answer them. Multiparty monitoring can help reduce conflict over proposed actions by providing a way for people with diverse views to discuss and reach an agreement about appropriate management activities. Multiparty monitoring is emphasized in the 2012 Forest Planning Rule and the Cooperative Forest Landscape Restoration Program. More information about multiparty monitoring from the National Forest Foundation can be found here.

Participatory Action Research – Approaches to research in and with communities that emphasize their participation in the process of studying a problem or answering a question in order to effectuate actions to address it. These approaches engage community members in some, and potentially all, aspects of the research process.[8]

Traditional Ecological Knowledge (TEK) – "A cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their

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[4] Berkes 2009
[5] Kellogg 2001, qtd. in Minkler & Wallerstein 2008
[6] Dickinson et al. 2010
[7] Armitage et al. 2011
[8] Long, Jonathan W.; Ballard, Heidi L.; Fisher, Larry A.; Belsky, Jill M. 2016.

environment".[9] TEK is typically used in reference to indigenous groups, while Local Ecological Knowledge (LEK) may be used in reference to non-indigenous groups that have accumulated ecological knowledge through generational transmission. See also: native knowledge.

Native Knowledge – A way of knowing or understanding the world, including traditional ecological, and social knowledge of the environment derived from multiple generations of indigenous peoples' interactions, observations, and experiences with their ecological systems. This knowledge is accumulated over successive generations and is expressed through oral traditions, ceremonies, stories, dances, songs, art, and other means within a cultural context (36 CFR 219.19).

[9] Berkes et al. 2000: 1252