

From NIMBY to BIMBY-Strategies for Enhancing Biodiversity in my Back Yard

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Opinion

The NIMBY (Not In My Back Yard) syndrome, coined in 1980 by the late Nicholas Ridley, symbolized the locally organized objection to (unwanted) human activities near or within sightlines of residential development [1]. Social scientists, and media, have been using this acronym since that time to describe the resistance by stakeholders to controversial facilities and land uses. Given human nature, the NIMBY response is not surprising, but such emotional reactions do little to solve complex environmental problems. We therefore suggest that a more constructive approach to developing acceptable and effective sustainability solutions is to utilize strategies that would embrace complexity and adopt actions within your own property-BIMBY (Biodiversity In My Back Yard) [2]. Most potential developments today can be engineered to ensure that Sustainable Development and its associated 17 Goals [3] can be achieved through novel and creative strategies. Local and pragmatic projects are imperative given the ever-increasing need for humanity to consider new approaches to biodiversity conservation. Scholars suggest that dwindling biodiversity is the greatest challenge facing humanity today [4]. This article provides a case study of how such approaches can be applied to conserving and enhancing biological diversity at the urban backyard-scale.

Although use of the term biological diversity first appeared in 1916 in a *Scientific Monthly* article written by Harris [5], surprisingly, the concept of biodiversity was not part of modern vernacular until its resurgence [6]. The term biological diversity has been defined and redefined several times, but the original intent remains the same: 'the variety of life in all forms, at all levels, and in all combinations, in a defined area' [7]. Biological diversity can be defined at various hierarchical scales, whether that be the level of genes, species, populations, communities, ecosystems, and/or landscapes. The spatial area within which biological diversity is measured, is human-defined, and varies in size, from an area as large as the Earth itself, to an area delineated as the size of a country, province/state, region, municipality, city/town/village, or even to an area the size of a puddle in your backyard.

Common environmental challenges that affect biodiversity optimization, as identified by Biswas [8] are industrialization and the accompanying polluting discharges, deforestation, human population growth, invasive species, and climate change. All of these negative sustainability drivers may be mitigated through combinations of environmental policy, architectural and engineering design, and the re-integration of natural processes into a technodominant society. These large-scale issues and identified solutions can be daunting for the average citizen to consider, although, adopting a BIMBY philosophy presents a powerful tool for citizen engagement in biodiversity enhancement. As noted by the International Union for the Conservation of Nature (IUCN), most 'backyard' landscapes located within the privately held urban realm, offer crucial platforms to amplify and support the important work of nature stewardship. These privately protected areas are identified as an essential component in achieving the Convention on Biological Diversity (CBD) Aichi Biodiversity Target 11 [9].

By embracing the BIMBY mantra, project decisions can be purposeful whereby specified design goals are fulfilled and biodiversity is a direct output. An individual might simply be ethically bound to 'save the whales'; however, with our scenario, the BIMBY framework

presents opportunity to assist an individual in building and conserving biomes that are species/genera-specific, that help the bees and butterflies (pollinators), songbirds, and small mammals thrive on their property. The psychology of humans adoring and protecting charismatic megafauna (polar bears, elephants, apes), can scale down to micro and meso-fauna-especially if one has an inherent pride of local place that mirrors to caring about global environmental issues.

So how does an individual participate in the social need to optimize global biodiversity-adding new habitats, and restoring landscapes-at the practical, local level? Homeowners (even those that may not own land, but control landscaping design decisions) have several approaches to create ecologically congruent backyards. These approaches range from professionally vetted, international sustainability standards, to grassroots/non-profit conservation programs. The common thread of any of these approaches is an outcome of biodiversity. All approaches employ a wide variety of human interventions (tips, tools, techniques) that allow for natural stewardship opportunities and backyard biodiversity enhancement. Examples of sustainability frames that would contribute to successful BIMBY implementation are:

i. LEED-United States Green Building Council's Leadership in Energy and Environmental Design. Mainly used by architects, engineers, and developers to create green and sustainable buildings, the certification process addresses how land, rainfall, and micro-climates interact within the property boundary.

ii. SITES-Administered by Green Business Certification Inc., American Landscape Architects and other partners, improve in the way the holistic, integrative, and aesthetic design process can be used in the landscape-offering a comprehensive approach embracing interaction with nature.

iii. Envision-created by stakeholders of the Institute of Sustainable Infrastructure (ISI), including the civil engineer discipline, which understands that "...projects have an impact on the natural world around them, including habitats, species, and nonliving natural systems" [10]. ISI approaches sustainability from an ecosystems services lens, allowing monetary values for water, air, food, and extreme weather events to align with traditional triple bottom line models of sustainable development.

iv. RELi-A certification standard recently adopted by Green Business Certification Inc. is a frame that complements sustainability by focusing on the resilience of a community-to deal with the protection of parks and preserves, the productivity of wetlands and habitat, the avoidance of toxins, water, and soil contamination, adverse geology, in order to contribute to healthy and biodiverse landscapes.

Beyond these professional frames, several types of formal/non-formal education programs exist at local, regional, and national institutional levels that provide backyard-scale conservation guidelines for gardeners (or those that would hire landscapers

adept at implementing said guidelines). Program examples include the Canadian Wildlife Federation the National Wildlife Federation and the United States Department of Agriculture's Natural Resources Conservation Service. As well as being generally wildlife-friendly themed, specific animal conservation programs exist that demand a biodiverse landscape that supports different life-stages of a species. For example, The Monarch Way Program promotes the conservation of the inter-generational travels of the monarch butterfly (*Danaus plexippus*), to promote important backyard plantings and highlight the ways in which insect pollinators and songbirds benefit from these purposefully designed habitats.

In the Anthropocene, citizen-led projects, such as BIMBY, are increasingly critical and deserving of ubiquitous uptake, necessitating support and encouragement from the scientific community. Therefore, scientists must adapt and seek out new approaches when communicating with the public, legislators, and corporate decision makers emphasizing why the findings matter, rather than the methodology used. Science for the sake of science is no longer justifiable when dealing with important short-term and long-term issues of ecological sustainability that BIMBY brings to the forefront. Importantly, scientists need to get to know new audiences and appreciate that the way to deliver scientific information cannot be based on a 'one size fits all' approach. This requires a new set of skills, not typically required (or even acquired) in academia or the research lab. With a new willingness to recognize and avoid complicated scientific jargon, scientists should use metaphors and analogies that are relatable for the intended audience [11] in this case BIMBY gardeners.

In order for scientists to best accomplish effective outreach to biodiversity-curious citizens wanting to implement BIMBY strategies, a diverse array of knowledge needs to be shored up to add to their skillsets. These include, but are not limited to, the biological, ecological, and physical sciences, quantitative/analytical tools, humanities and social sciences, communications, policy, administration, and law. There are professional organizations that provide their members with forward-looking, competency-based certifications that demonstrate achievement in a knowledge base involving complex sustainability concepts, including biodiversity. Excellent examples of certification programs that provide assistance are offered by The Wildlife Society the Ecological Society of America, as well as the International Society of Sustainability Professionals.

Scientists, recognizing this shifting paradigm, should participate in outreach work by talking to nature clubs and service organizations and contributing to educational websites as key elements for achieving society's biological diversity conservation goals. An excellent example of scientist-citizen interaction is the popular volunteer Master Gardener programs in the USA and Canada. Here, participants receive advanced education in botany, horticulture, and sustainable land-use. Master Gardening programs, focuses on promoting healthy environments with

sustainable gardening practices, green waste reduction, and water conservation all practical techniques that applies to the successful implementation of BIMBY. This newly learned ecological literacy spins greater understanding for the importance of biodiversity in the backyard, expanding to more environmental stewardship curiosity.

Conclusion

In society (and its scientific media voices) we should avoid breathing too much life into confrontational messages like NIMBY (Not In My Back Yard), and start actively endorsing BIMBY (Biodiversity In My Back Yard) approaches to the general public. The latter will emphasize a synergistic methodology intended to meet the needs and goals of conserving Earth's ecological goods and services that is personal and individually motivated. In short, BIMBY presents local, practical solutions that uplift realistic and achievable frameworks for future generations to be sustainable, resilient, and regenerative.

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