



## Think Note

## Homeowners associations: Friend or foe to native desert avifauna? Conservation concerns and opportunities for research

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## ABSTRACT

The rapid urbanization experienced in arid environments worldwide has raised the issue of how wildlife adapt to such drastic landscape changes. Along the periphery of many desert cities are housing developments governed by homeowners associations. These homeowners associations often place strict restrictions on planted vegetation which may have implications for bird usage, particularly for those dependent on thorny vegetation. However despite the potential negative effects of such restrictions, such organizations may offer promise as a means of maintaining consistent landscape cover over a large urban area. Consideration of such organizations, through research and education can provide a means of pursuing conservation practice in difficult urban areas.

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## 1. Introduction

The most profound anthropogenic alteration of a natural landscape is urbanization, and recently this issue is recognized as a major concern for conservation biologists (Borgstrom, 2009; Shochat et al., 2010). The majority of the world's population now lives in cities marking both a human milestone and a threat to biodiversity worldwide. As cities encroach onto native habitats, developing communities that minimize impact on natural ecosystems and encourage their colonization by native wildlife becomes paramount. Urban ecologists have identified communities on the periphery of cities (i.e. suburban and exurban areas) as the most promising for conserving wildlife in an urban setting, due to their proximity to rural locations (Blair and Johnson, 2008; Palmer et al., 2008). Many of these communities are constructed as common-interest developments (CID) and these are the fastest growing housing form in the USA and in the world today (McKenzie, 2003). These CIDs can include a variety of housing types including: condominiums, timeshares, and planned unit developments (Deng, 2002; Heller, 2005). However, the latter is particularly important from a conservation perspective, as they are most prevalent along the peripheries of major cities in the developed world (McKenzie, 2003) and is especially prevalent in the large urban centers embedded within desert ecosystems (Shepherd, 2006).

The concept behind CIDs is the promotion of large scale; structurally similar and aesthetically unified land developments regulated by a centralized housing authority, otherwise known as a homeowners association (HOA). Currently an estimated 57 million people in the United States that are members of a HOA. These HOAs are created usually by the real estate developer prior to the initial selling of homes, but governing authority is often transferred to homeowners after developers opt out financially (Chen and Webster, 2005; Miller, 1979; Rahe, 2002). Membership in the HOA is mandatory for all homeowners and the primary function of the HOA's development is to ensure a degree of conformity for housing units and property, and regulate common use facilities and amenities (Chen and Webster, 2005). This is accomplished through enforcement of "covenants, conditions and restrictions" placed on how individual properties are managed (McCabe, 2005) and this provides HOAs an opportunity to indirectly manage property values (Jackson, 1975; Rahe, 2002).

The Sonoran Desert of the southwestern United States is experiencing one of the highest rates of urbanization in the world (Shen et al., 2008), and this echoes the pattern of increased urbanization in arid environments worldwide (Shepherd, 2006). Planned unit developments in particular account for a considerable majority of suburban and exurban development in the state of Arizona (Bark-Hodgins and Colby, 2006; Hostetler and Noiseux, 2010). To ensure conformity, HOAs often restrict the types of landscaping that a homeowner can manage on their property. These rules can vary, but a survey of regulations for several HOAs within the rapidly expanding city of Phoenix, Arizona revealed several consistent patterns that may have bearing on conservation practice within the Sonoran Desert.

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## 2. Potential threats to Sonoran Desert birds

One striking regulation is that restricting the types of vegetation that can be “planted” or “managed” on homeowner property. Specifically, a survey of regulations in 43 different HOAs scattered throughout the Phoenix metropolitan area, revealed that all of them restricted the planting of thorny (non-cactus) vegetation in the front ( $n = 36$ ), or both the front and backyards ( $n = 7$ ). In addition, 28 HOAs specifically suggested exotic (non-thorny) versions that can be planted in lieu of native species. These observations are particularly interesting since: 1) many of these HOAs ( $n = 31$ ) recommended xeric landscaping which mimics the native Sonoran Desert habitat; and 2) ironically the housing developments and their streets were often named after many of the plants that are restricted by the current HOA regulations (e.g. Cholla, Mesquite, Hackberry). The latter reminded me of a quote from Bill Vaughan, a columnist from the Kansas City Star who once remarked that “Suburbia is where the developer bulldozes out the trees then names the streets after them”. Apparently this applies in the Sonoran Desert as well. An additional observation is that 19 HOAs also restricted the size of certain native cactus species, such as barrel cacti (*Ferocactus* spp.), organ pipe (*Stenocereus thurberi*) and saguaro (*Carnegiea gigantea*). These restrictions on the types and size of native vegetation can potentially influence their use by local Sonoran Desert wildlife. In particular, those species whose urban distribution is heavily influenced by the presence of appropriate vegetation (i.e. urban-adapters: (Blair, 1996)) are most at risk for being affected.

Thorny vegetation is a hallmark of the Sonoran Desert and many native desert species and in particular birds, rely on such plants as nest and roost sites (Green and Baker, 2003). Among the breeding songbird species characteristic of Sonoran Desert habitat, 12 can be described as facultative users of thorny plants for nesting with an additional seven species obligate nesters in thorny plants (based on the Birds of North America Species Accounts, Cornell Lab of Ornithology). Of these 19 songbird species, 15 have been declining in number in the Sonoran Desert ecoregion since 1990 according to both breeding bird and Christmas bird count surveys (United States Geological Survey and National Audubon Society, respectively). These declines are likely at least partly due to the intensive urbanization seen within the Sonoran Desert region during this period (Keys et al., 2007; Shen et al., 2008). Thus HOAs may limit the degree to which desert birds can use planned community landscapes, even those that are xeric in nature, by limiting the thorny plants that are a major component of the Sonoran Desert landscape. The reasons for limiting these plants are rarely provided but conversations with board members of Phoenix-area HOAs propose two main concerns: 1) the safety of homeowner children and pets; and 2) the shedding of some thorny cactus species, namely the cholla cacti (*Cylindropuntia* spp.). Although these may be legitimate concerns to homeowners, board members from several HOAs were also very reluctant to discuss the rationale behind regulations either in person or during phone discussion. Indeed, 77% of the 113 separate HOAs in the Phoenix-area identified in an extensive online search restricted public (i.e. non-member) access to HOA rules.

## 3. Opportunities for research and conservation

Despite the potentially negative impacts of HOAs on native birds, there are also potential benefits of these communities to both research and conservation. Many studies investigating patterns of animal abundance and species richness in urban ecosystems and have identified suburban and exurban fringe communities as often having greater diversity than either native or more interior urban

habitats in a variety of taxa (Green and Baker, 2003). The reasons for this edge effect may vary, but can include native wildlife in these peripheral urban areas having: increased access to human food resources (Belant et al., 1998; Sauter et al., 2006); an absence of predators (Anderies et al., 2007; Chamberlain et al., 2009; Moller, 2008); the presence/absence of introduced species (McKinney, 2006); the presence of standing water (Mattson and Chambers, 2009); exotic vegetation (French et al., 2005; Walker et al., 2009); and buildings for nesting or roosting sites (Everding and Jones, 2006; Moller, 2010). Thus HOA communities along the fringes of cities are already interfacing with wildlife populations and proper management practices focused on these areas can further promote the integration of native animals into urban areas.

Unlike many natural habitats, conservation within urban areas requires a consideration of the effect of landscape scale, and this can vary depending on the taxa under consideration (Blair, 1996; Buyantuyev et al., 2010; Goddard et al., 2010; Hostetler, 1999; Natuhara and Imai, 1996). The heterogenous matrix of an urban area can include residential housing tracts, commercial districts, industrial areas, and semi-natural parks of varying size. Cities can also vary with respect to their spatial organization, such as grid-like patterns of roads, or developments limited by the presence of natural features such as riverine valleys and cliffs. Thus urban ecology studies must consider this effect of scaling and HOA-based communities provide an opportunity to “control” or minimize variation in an urban landscape providing a consistent habitat to research. Homeowners associations are also present throughout a typical city, not just along the periphery allowing excellent opportunities to consider source-sink dynamics of colonization of urban areas by wildlife. Studies comparing patterns of biodiversity or habitat use in HOA-based communities and those without HOA regulations may lead to some interesting results concerning the importance of habitat heterogeneity and distance from edge in urban ecosystems.

Conservation in urban ecosystems, even more so than in natural environments require consideration of human attitudes towards wildlife. This has been demonstrated in studies relating attitudes towards wildlife, socioeconomic drivers and patterns of biodiversity in a number of cities (Hope et al., 2003). Richer communities tend to have higher biodiversity and an increased awareness of nature than lower-income communities (Harris et al., 1997). Members of HOAs in the USA tend to be in the upper middle socioeconomic class and this group often have favorable views concerning nature (Horton and Thomas, 1998). This is partly evident by the tendency to purchase homes in the periphery of town near natural landscapes and the frequent naming of both streets and communities after natural features, including wildlife. Indeed many in this target group are actively involved in outdoor recreational activities such as birding, hunting, fishing, nature photography and other recreational activities, and often enjoy having wildlife in close proximity. Taken together this provides a significant public outreach and citizen science opportunity and a chance to influence internal HOA policy makers without the bureaucracy that often impedes conservation efforts relying on cooperation from municipal or state governments. Urbanization will continue worldwide and thus the need to incorporate urban wildlife into community planning should be an essential component of conservation efforts.

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