‘Rewild My Street’: a model for biodiverse, community-led urban redevelopment

Siân Moxon

Abstract

Nature is generous to us, providing valuable ecosystem services, and enhancing our health and wellbeing. Humans are not so generous to nature, being responsible for environmental problems, including alarming losses of biodiversity, through unsustainable consumption of resources. This paper agues for a more symbiotic relationship between humans and nature, applying the rewilding ethos to cities, where it could significantly benefit both wildlife and people.

London, which will become a National Park City in 2019 by committing to increase greenspace and biodiversity, provides an ideal test bed for ideas to achieve urban rewilding. Private gardens, which make up 24% of the capital and connect other habitats, are crucial to this agenda – yet the capital loses 2.5 Hype Parks of greenspace each year as residents pave over soft landscaping. To reverse this trend and realise the full environmental potential of cities such as London, a new model for implementing policy and empowering communities is needed, as current initiatives prioritise new buildings and public greenspace.

Solutions need to come from generous designers willing to help local communities effect change themselves. ‘Rewild My Street’ is a design-led research project that aims to instigate this in London and provide a model for other cities. Through architectural drawings, a spatial manifesto and guidance collated in an open-access, web-based resource, it demonstrates how a typical existing residential street could be adapted to improve biodiversity. The resource seeks to engage residents to transform their homes, gardens and streets - through simple actions that have a cumulative effect. The project embodies generosity by gifting a sustainable legacy to future generations and

other species; offering delight through contact with nature; sharing architectural knowledge with the public; and enabling community participation in change. The paper urges architects to offer their skills to set up similar projects for public benefit.

Background: Nature and Generosity

Nature is unintentionally generous to us. It provides quantifiable natural capital, the ecosystem services provided by natural resources, valued at over £1.5 trillion in the UK.[1] This includes the provision of resources, such as food and building materials, and processes, such as air purification and flood prevention. At a more elemental level, our species' long evolution in the natural world could explain why people report an emotionally and cognitively restorative effect from spending time in natural environments.[2] More specifically, contact with wildlife has been shown to have a positive correlation with human life expectancy.[3] It is time we returned the favour. Humans are not so benevolent to the natural world or other species, being responsible for habitat destruction, biodiversity loss, pollution and climate change through over-exploitation of natural resources, compounded by our population growth and increasing consumption. Indeed, it is estimated that only a quarter of land on earth remains largely unaffected by human activity, and this is projected to decline to one tenth by 2050. As a consequence, global populations of wildlife have declined by 60% from 1970 to 2014[4] and we would need one and a half earths to sustain even our present lifestyle.[5] There is therefore both a moral duty and a survival imperative to address this imbalance.

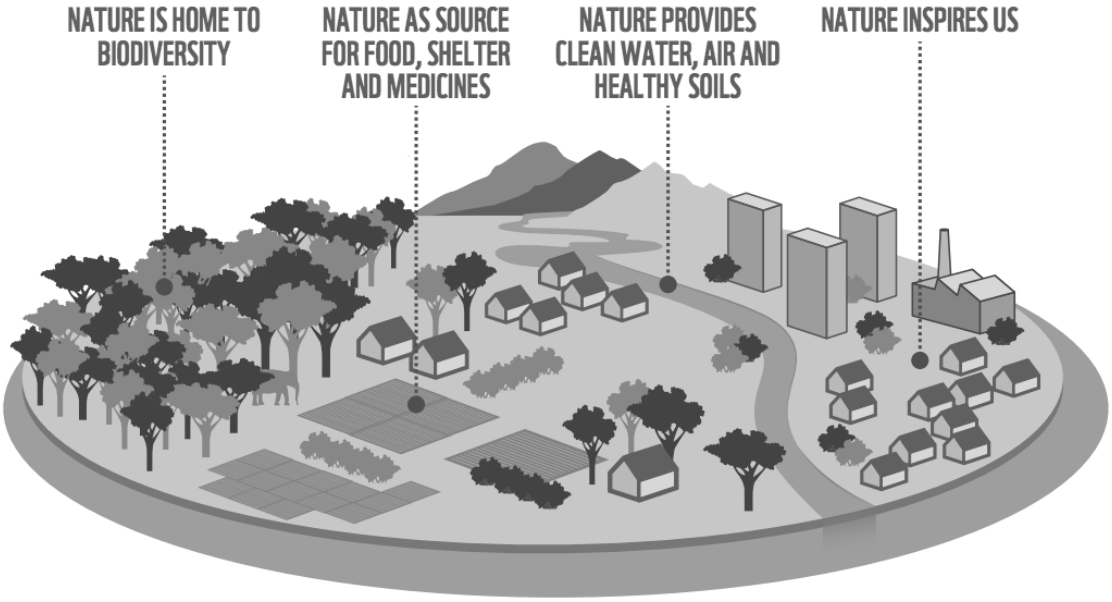


Fig.1. Infographic showing the benefits nature offers to people. [Copyright WWF]

Thankfully, change is beginning to happen with rural rewilding projects founded by generous, wealthy donors seeking to restore natural habitats and reconnect people with nature.[6] Yet, when over 80% of the UK population inhabit towns and cities,[7] the same ethos of rewilding should be applied to enhance our urban environments, albeit in a model that is affordable for more people. With spending time in a natural space rather than a built-up one shown to significantly lower our blood pressure, pulse rate and cortisol levels,[8] city dwellers arguably need greenspace most. Moreover, studies showing raised wellbeing and neighbourhood satisfaction among residents of urban areas with greater biodiversity indicate benefits from the fauna greenspace can attract.[9] In parallel, cities could help wildlife too: urban areas can provide important habitat for wildlife, which is in alarming decline across rural habitats. From 1970 to 2013 over half of the UK's species have declined, with the main threats being changing farming practices and climate change. Meanwhile, increases in some bat species in urban areas demonstrate that conservation efforts to share our towns and cities with other species can be part of the solution.[10]

Setting: London National Park City

London, a thriving, multicultural metropolis that manages to accommodate 47% green and blue space, offers a timely opportunity to test ideas for enabling urban rewilding. The UK capital will become the world's first National Park City in 2019, reflecting a commitment to enhance this greenspace for wildlife and people, in line with UK[11] and EU[12] targets. The Mayor of London has pledged to increase green infrastructure to 50% and tree cover by 12% by 2050.[13] Private gardens, which make up 24% of the capital and connect other habitats,[14] are crucial to this agenda. However, the city loses the equivalent of 2.5 Hype Parks of greenspace each year as residents replace their lawns, flowerbeds and trees with hard surfaces and outbuildings. Over a ten-year period, hard surfaces increased by 26%, while vegetation decreased by 12%. These changes have a significant detrimental effect on the biodiversity value of gardens, particularly when considered in terms of their contribution to a block of interconnected neighbourhood gardens and the city as a whole.[15]

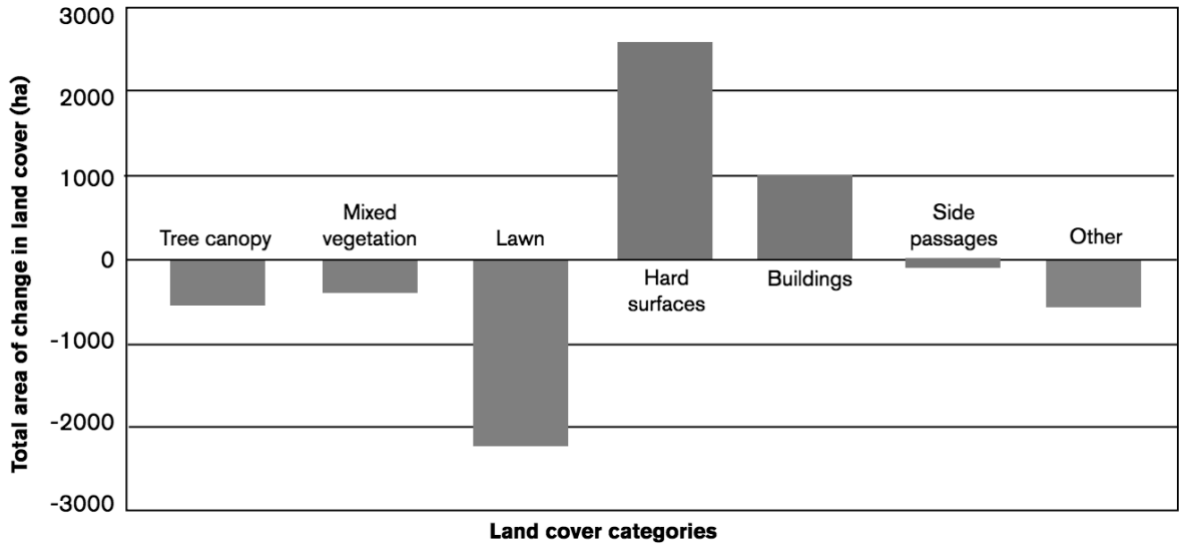


Fig. 2. Change in area of land cover categories (ha) for all gardens between 1998-99 and 2006-08 in London [Copyright: Chloe Smith/GiGL]

There is a limit to what can be done through regulation to stop or reverse this trend in private garden management, as existing gardens largely fall outside the scope of local government.[16] There are restrictions on the area of front gardens that can be converted to impermeable hard surfacing without planning permission, but these are aimed at reducing flood risk and do not therefore stipulate protecting vegetation.[17] Some tree canopy loss is prevented by Tree Preservation Orders that protect trees of significant amenity benefit to a neighbourhood, although hedges and shrubs are exempt. [18] Unacceptable housing development within back gardens is also prohibited, but this accounts for an insignificant loss of greenspace at city level compared with uncontrolled garden outbuildings.[19] Meanwhile, initiatives to increase greenery and biodiversity, such as those set out in the Government's Strategy for Sustainable Construction[20] and Mayor of London's Environment Strategy,[21] typically prioritise new buildings and public greenspace, which are easier to influence.[22] It is therefore vital to educate residents on why and how to manage their own gardens for wildlife, and to demand changes to their streets from local councils. To enable this and realise the full potential of cities such as London to welcome biodiversity, a new model for implementing policy and empowering communities is needed.

Premise: A New Model for Urban Rewilding

To help deliver this solution, a spirit of generosity is required from designers passionate about creating sustainable urban environments, who are willing to devote their time and share their knowledge and skills with the public. By developing resources that engage, educate and empower

local residents to effect change themselves - and lobby councils for further changes - architects, landscape architects and urban designers could have huge influence on shaping our cities to be fit for the future.

To this end a research project, 'Rewild My Street', has been created by a team of architects, academics and ecologists to generate a tool to help urban communities transform their own homes, gardens and streets to attract wildlife. The project uses the Victorian terraced street typology prevalent in many London boroughs to represent a typical residential street. Architectural drawings and a spatial manifesto demonstrate how this notional street could be adapted to increase its biodiversity. The guidance is collated in an open-access, web-based resource, rewildmystreet.org, to allow anyone to benefit from the authors' expertise and research.

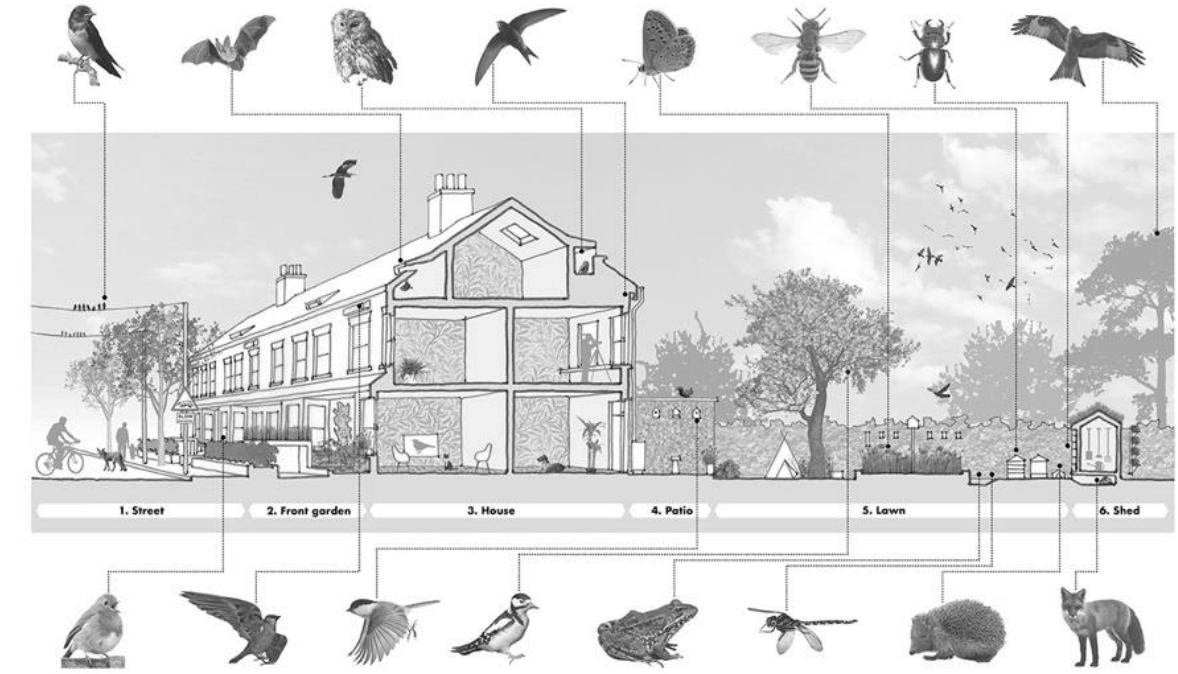
The research is led by architects, who offer the profession's strengths in communicating a vision, creating an integrated design proposal, organising diverse information, and acting as agents for change for public benefit.

Through the manifesto, the architects use their ability to capture a vision for a project in words to provide a cogent call for action:

> Take a typical London residential street. Adapt its terraces, gardens and streetscape to transform it into a haven for wildlife. The street will come back to life: the bees will be buzzing, the birds will be singing, the frogs will be hopping and the owls will be hooting. The changing seasons and the pattern of day and night will be seen from every living room - while children growing up on the street will have nature on their doorsteps.
>
> No more paved over front gardens, no more felled street trees, no more synthetic lawns. Bring back real greenery and real life. Every small change will add up to make a big difference.
>
> Just add wildflower meadows, patio ponds, bird boxes and feeders, and insect hotels. Puncture the fences to link up back gardens, forming mammal corridors. And watch the wildlife return in droves.
>
> While addressing the alarming decline in biodiversity, the newly green streets will improve air quality, and lessen urban overheating and flood risk associated with climate change. Londoners will benefit from improved health and wellbeing through better access to nature.
>
> Gardens cover a quarter of London and existing buildings will remain with us for years to come. For a lasting legacy, we must enable these spaces to accommodate nature, turning the whole city into a National Park to make future generations proud. Rewild My Street will do exactly this.

The accompanying colour-rendered drawings are intended to inspire and educate residents, councils and designers to make changes by showcasing how wildlife features can be successfully integrated into an urban setting. Street-scale plan, elevation, sectional perspective and isometric views at 1:1250 communicate how the proposed street could look. Here, the architects use their skill at showing an aspirational proposal through imagery to persuade people to make changes. Keys cross-reference the drawings to curated external links to hand-picked products and step-by-step activities to help people attract wildlife, and to expert information on species and habitats to highlight the value of doing so. Thus, the resource brings together a wealth of diverse guidance in one place, curated with a design sensibility.

The model is intended to be practical, rather than radical, to ensure its success. Most of the measures proposed are simple, inexpensive and easily achievable, such as installing a bird box or making a log pile. Each adaptation can be made either in isolation or as part of a suite of alterations, and can be implemented through step-by-step DIY activities or off-the-shelf products, allowing individuals to choose how generous to be with their time and money to help wildlife. Nevertheless, if most houses implemented one or more things, these small actions could quickly add up across a street, neighbourhood or city to have a cumulative effect. An individual urban garden might be small, but when viewed as a street of interconnected gardens, perhaps also linking to a public park or allotment, it could contribute to a significant area of greenspace and potential wildlife habitat. More major proposals, such as creating a car-free street park, are suggested in the public realm to encourage residents to lobby their council to undertake street-scale improvement schemes.



Species	Guide
Mammal	The Mammal Society
Badger	The Mammal Society
Bats	Bat Conservation Trust
Deer (Muntjac)	The Mammal Society
Fox	The Mammal Society
Hedgehog	Hedgehog Street
Mole	The Mammal Society
Mouse (Wood)	The Mammal Society
Otter	The Mammal Society
Rabbit	The Mammal Society
Rat (Brown)	The Mammal Society
Shrew (Common)	The Mammal Society
Squirrel (Grey)	The Mammal Society
Vole (Field)	The Mammal Society
Water Vole	The Mammal Society

Species	Guide
Bird of prey	Hawk & Owl Trust
Hobby	Hawk & Owl Trust
Kestrel	Hawk & Owl Trust
Owl (Tawny)	Hawk & Owl Trust
Peregrine	Hawk & Owl Trust
Red Kite	Hawk & Owl Trust
Sparrowhawk	Hawk & Owl Trust

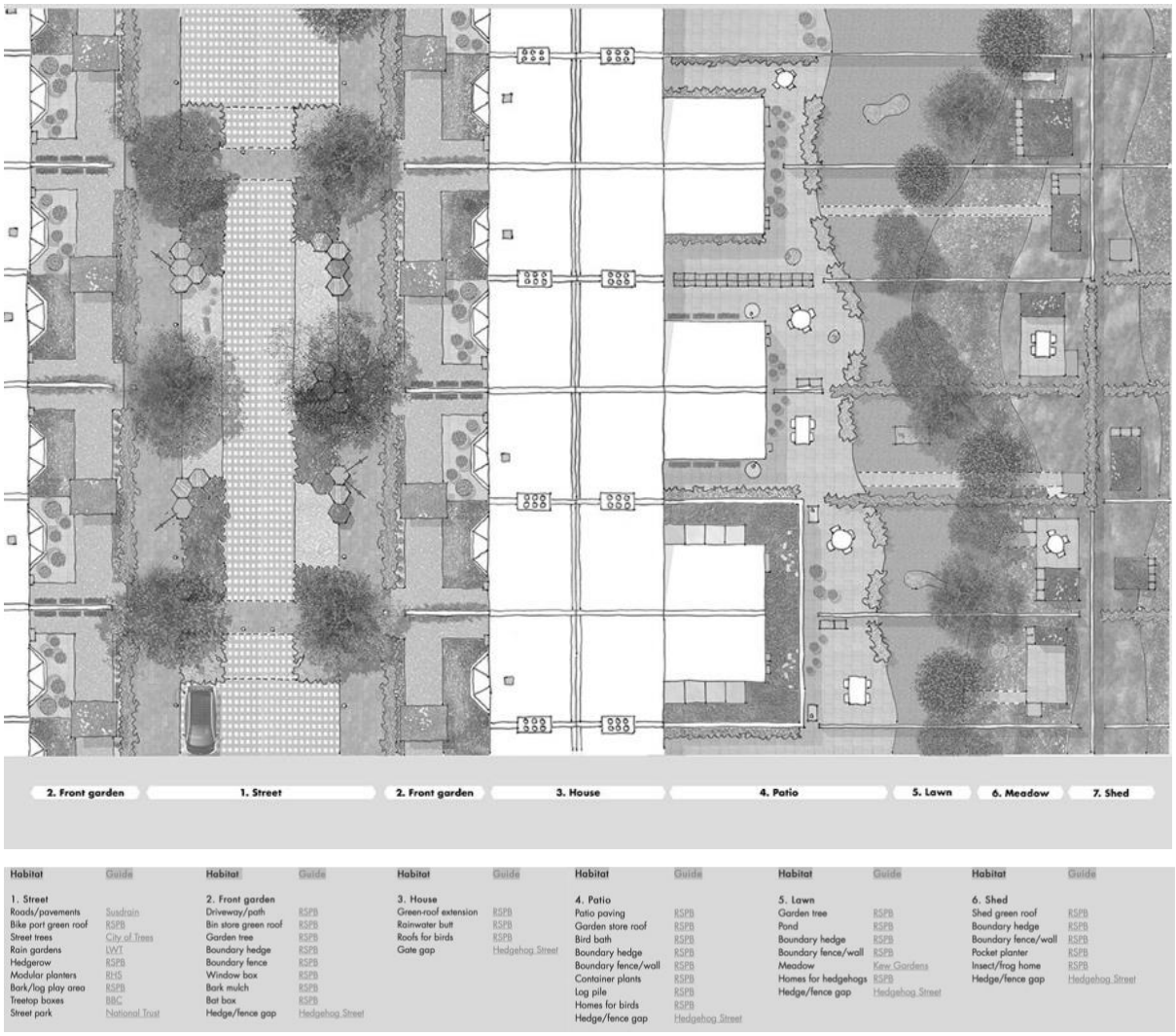
Species	Guide
Bird (other)	RSPB
Blackbird	RSPB
Black Cap	RSPB
Black Redstart	RSPB
Crows	RSPB
Ducks/geese/swans	RSPB
Dunnock	RSPB
Finches	RSPB
Goldcrest	RSPB
Gulls/terns	RSPB
Heron (Grey)	RSPB
Nuthatch	RSPB
Parakeet (Ring-necked)	RSPB
Pigeons/doves	RSPB
Robin	RSPB
Sparrows	RSPB
Starling	RSPB
Swallow/martins	RSPB
Swift	Swift Conservation
Tits	RSPB
Thrushes	RSPB
Wagtails	RSPB
Warblers	RSPB
Woodpeckers	RSPB
Wren	RSPB

Species	Guide
Amphibian/reptile	Froglife
Adder	Froglife
Frog (Common)	Froglife
Grass Snake	Froglife
Lizard (Common)	Froglife
Newt (Great Crested)	Froglife
Newt (Smooth)	Froglife
Slow Worm	Froglife
Toad (Common)	Froglife

Species	Guide
Invertebrate	Buglife
Ants	Buglife
Bees/wasps	Buglife
Beetles	Buglife
Bumblebees	Bumblebee Cons. Trust
Butterflies	Butterfly Conservation
Flies	Buglife
Grasshoppers/crickets	Buglife
Lacewings	Buglife
Mayflies	Buglife
Millipedes/centipedes	Buglife
Moths	Butterfly Conservation
Slugs/snails	Buglife
Spiders	Buglife
True bugs	Buglife
Woodlice	Buglife

Species	Guide
Plant/fungus	Plantlife
Fungi	Woodland Trust
Trees/hedges	Woodland Trust
Wildflowers	Plantlife

Fig. 3. Sectional perspective drawing of proposed street highlighting potential urban wildlife species [Copyright: report author]



Habitat	Guide
1. Street	
Roads/pavements	Susdrain
Bike port green roof	RSPB
Street trees	City of Trees
Rain gardens	LWT
Hedgerow	RSPB
Modular planters	RHS
Bark/log play area	RSPB
Treetop boxes	BBC
Street park	National Trust

Habitat	Guide
2. Front garden	
Driveway/path	RSPB
Bin store green roof	RSPB
Garden tree	RSPB
Boundary hedge	RSPB
Boundary fence	RSPB
Window box	RSPB
Bark mulch	RSPB
Bat box	RSPB
Hedge/fence gap	Hedgehog Street

Habitat	Guide
3. House	
Green-roof extension	RSPB
Rainwater butt	RSPB
Roofs for birds	RSPB
Gate gap	Hedgehog Street

Habitat	Guide
4. Patio	
Patio paving	RSPB
Garden store roof	RSPB
Bird bath	RSPB
Boundary hedge	RSPB
Boundary fence/wall	RSPB
Container plants	RSPB
Log pile	RSPB
Homes for birds	RSPB
Hedge/fence gap	Hedgehog Street

Habitat	Guide
5. Lawn	
Garden tree	RSPB
Pond	RSPB
Boundary hedge	RSPB
Boundary fence/wall	RSPB
Meadow	Kew Gardens
Homes for hedgehogs	RSPB
Hedge/fence gap	Hedgehog Street

Habitat	Guide
6. Shed	
Shed green roof	RSPB
Boundary hedge	RSPB
Boundary fence/wall	RSPB
Pocket planter	RSPB
Insect/frog home	RSPB
Hedge/fence gap	Hedgehog Street

Fig. 4. Plan drawing of proposed street highlighting potential urban wildlife habitats [Copyright: report author]

Activity	Step-by-step	Activity	Step-by-step	Activity	Step-by-step	Activity	Step-by-step	Activity	Step-by-step	Activity	Step-by-step
1. Street		**2. Front garden**		**3. House**		**4. Patio**		**5. Lawn**		**6. Shed**	
Limit outdoor lighting	RHS	Green your bin store	LWT	Make a nestbox cam	Gardeners' World	Grow a green wall	RSPB	Plant a mini meadow	Buglife	Make an insect hotel	Buglife
Plant your bike port	Front Yard Co	Build a raised bed	RHS	Build an owl nest box	Barn Owl Trust	Build a bird box	RSPB	Feed the birds	RSPB	Add a green roof	LWT
Plant a tree	RSPB	Plant window boxes	RSPB	Limit cat kills	RSPB	Make a bird bath	RSPB	Make a mini pond	RSPB	Make a frog house	RSPB
Make a bee hotel	Buglife	Make a sparrow box	RSPB	Build a swift box	Action for Swifts	Grow container plants	RSPB	Make compost	RSPB	Make a wildlife gap	RSPB
Plant a hedgerow	LWT	Build a bat box	Bat Conservation Trust	Install a rainwater butt	RSPB	Make a log pile	Buglife	Make a hog house	Hedgehog Street	Make a pocket planter	Birds & Blooms

Fig. 5. Aerial view drawing of proposed street highlighting activities to attract urban wildlife [Copyright: report author's research assistant]

Product	Shop	Product	Shop	Product	Shop	Product	Shop	Product	Shop	Product	Shop
1. Street		**2. Front garden**		**3. House**		**4. Patio**		**5. Lawn**		**6. Shed**	
Outdoor lighting	Woodscape	Green roof bin store	Front Yard Company	Nestbox camera	RSPB	Green wall	Treebox	Mini meadow	Meadowmat	Insect hotel	Crocus
Planted bike port	Cyclehoop	Raised bed	Woodblocx	Tawny owl nest box	RSPB	Nest boxes	Habi Sabi	Bird table/feeders	RSPB	Green roof	Posh Shed Company
Tree	Habitat Aid	Window boxes	Crocus	Anti-hunt cat collar	Hi-Craft	Bird bath	RSPB	Container pond	Waterside Nursery	Frog house	RSPB
Treetop beehive	Bee Kind Hives	Sparrow terrace	NHBS	Swift box	Swift Conservation	Container plants	Crocus	Compost bin	Primrose	Wildlife fence gap	Jacksons Fencing
Hedgerow	Habitat Aid	Bat box/roof tile	NHBS	Rainwater butt	Hugo	Log pile bench	Holmes & Gardens	Hedgehog house	Ark Wildlife	Pocket planter	WaltyGrz

Fig. 6. Front garden elevation drawing of proposed street highlighting products to attract urban wildlife [Copyright: report author]

Product	Shop	Product	Shop	Product	Shop	Product	Shop	Product	Shop	Product	Shop
1. Street		**2. Front garden**		**3. House**		**4. Patio**		**5. Lawn**		**6. Shed**	
Outdoor lighting	Woodscape	Green roof bin store	Front Yard Company	Nestbox camera	RSPB	Green wall	Treebox	Mini meadow	Meadowmat	Insect hotel	Crocus
Planted bike port	Cyclehoop	Raised bed	Woodblocx	Tawny owl nest box	RSPB	Nest boxes	Hobi Sobi	Bird table/feeders	RSPB	Green roof	Posh Shed Company
Tree	Habitat Aid	Window boxes	Crocus	Anti-hunt cat collar	Hi-Craft	Bird bath	RSPB	Container pond	Waterside Nursery	Frog house	RSPB
Treetop beehive	Bee Kind Hives	Sparrow terrace	NHBS	Swift box	Swift Conservation	Container plants	Crocus	Compost bin	Primrose	Wildlife fence gap	Jacksons Fencing
Hedgerow	Habitat Aid	Bat box/roof tile	NHBS	Rainwater butt	Hugo	Log pile bench	Holmes & Gardens	Hedgehog house	Ark Wildlife	Pocket planter	WaltyGrz

Fig. 7. Rear garden elevation drawing of proposed street highlighting products to attract urban wildlife [Copyright: report author]

Results and Discussion: A Scalable Model

The project's generous aims and approach have been well received by the public, professional and academic audiences sampled to date, indicating that sharing inspirational architectural proposals can capture the public imagination and foster a desire to give back to our urban environments. The project has achieved competition success, winning the Imagine London as a National Park City international design ideas competition and being a finalist in London Metropolitan University's Big Idea Challenge. Its reach and appeal is growing, as it continues to attract mainstream media coverage, social media followers, mailing list subscribers and support from related organizations.

Initial interest in the scheme will be measured through analysis of numbers signing up to the website mailing list and following the project's social media accounts. However, a wider marketing campaign should be completed before an accurate assessment can be made of the initiative's popularity and potential impact.

The project already provides an important prototype for enriching the biodiversity of London and other urban areas. Further research and development is required by the project team to build on this foundation. This should involve raising awareness of and engagement in the project through widespread publicity, developing the project resources with further scales of drawing and related projects, and measuring the uptake of the project by the public and its impact on biodiversity levels.

Rewild My Street has set up a scalable model for redeveloping London and other urban areas as biodiverse sustainable cities, highlighting the potential of generosity in architecture to tackle urgent environmental problems. The model could be a catalyst for a more symbiotic relationship between our conurbations and wildlife, and underpin the creation of a growing network of National Park cities.

Conclusions: The Potential of Generosity

The Rewild My Street model clearly embodies generosity by sharing specialist architectural knowledge, skills and communication techniques as widely as possible for public benefit. This contrasts with potential public perceptions of the architectural profession as closed and elitist. Further, it is perpetually generous in providing an educational tool to allow ongoing community participation in change, rather than a more short-term approach of offering a one-off design service.

Yet the greater act of generosity is in the outcome the model seeks to achieve: creating sustainable urban environments that will mature and endure to benefit humans and other species for generations to come. Allowing a wider variety and greater numbers of other plant and animal species to coexist with us in our most densely populated hubs is a benevolence that demonstrates we value life beyond our own kind, which our intelligent species is in a unique position to protect. But this gift is not entirely selfless. Greening streets also benefits people, promoting health and wellbeing, improving the appearance and air quality of neighbourhoods, and reducing urban overheating and flood risk associated with climate change.[23] The project will also offer delight through design interventions that give city dwellers greater contact with nature, its daily and seasonal rhythms, and its restorative effects.

As a further act of generosity, the current resources could be expanded to give incentives to reward users' efforts. The website could include an interactive mapping feature, allowing residents to record

adaptations they have made. This could be linked to an award scheme, recognising exemplar 'wild homes' or 'wild streets', and could help identify sample streets for measuring biodiversity levels before and after adaptations are made. Built projects, such as a show home or street, which would demonstrate possible adaptations for biodiversity to the public could also complement the initiative.

The creators hope the project will inspire designers to be generous with their ideas and creative output. Of course, the ideal situation would be that their time was rewarded financially by funding from government or environmental organisations, or through research grants from collaborating with academia. Notwithstanding this, the research underpinning such projects can be beneficial and rewarding for the designer, and could lead to advantageous publicity and related design commissions. Moreover, it is the willingness to share creative solutions to drive changes they are passionate about seeing in the built environment that is of primary importance. Embracing this approach to engage the public offers a real opportunity for designers to make a mark on society.

There is huge potential for similar projects taking a generous approach to architecture to prompt sustainable redevelopment of cities. These could focus on environmental issues other than biodiversity, such as air quality, flood risk, urban agriculture, waste minimisation and adapting to climate change. They could be set in other residential typologies, building types, cities or climates. For example, drawings could be produced to show how a typical urban school might be adapted with measures to improve air quality, such as barrier hedges, plants and paints that absorb pollutants, low-emitting materials, and car-free zones. Most of these measures would be complimentary to those aimed at increasing biodiversity, but would emphasize other topical, environmental benefits. Hence, these projects could collectively engage a broader range of the public, and contribute to an overarching goal of making our cities more liveable and sustainable.

[3191 words, excluding endnotes]

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