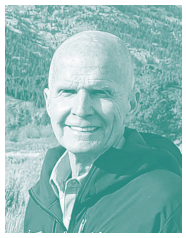
城市野境：
比“城市荒野”更准确的措辞
Urban Wildness
—A More Correct Term Than “Urban Wilderness”



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摘要

“荒野”概念具有多样化的特征与多重价值，蕴含着生物、社会–经济及象征意义。为了厘清这一概念，1992年，该术语被列入了世界自然保护联盟的“自然保护地分类”中。然而，近年来“城市荒野”一词开始流行，使那些重视自然荒野区对地球未来健康与福祉的作用并致力于保护这些区域的人士感到担忧。这种用法还很可能令（现在占全球人口大多数的）城市居民对“真正的”荒野是什么感到困惑。狭义上，城市不可能拥有严格意义上的“荒野”；但荒野的某些元素可以且应该出现在城市内及城市周边地区，从而提高人类健康和生活品质。基于此，“城市野境”或为更恰当的措辞。因此，本文主张以“城市野境”替代“城市荒野”一词，阐述替代原因的同时列举了城市野境的特征和效益；剖析了“城市野境”的成功案例；阐明野生动物（尤其是捕食者）在城市中的角色和面临的挑战；最后，结合案例说明了将城市居民与野性价值和效益联系起来的公众参与和公众教育方法论。

关键词

城市野境；城市荒野；人类与野生动物共存；生物多样性；荒野；城市自然挑战；环境教育；城市中的自然；捕食者 – 猎物

ABSTRACT

The concept of wilderness (荒野) has multiple characteristics and values relating to three principal areas: biological, socio-economic, and iconic. To provide clarity of concept, the term was included in the IUCN's list of Protected Area Categories in 1992. More recently, a current and fashionable expression “urban wilderness” has emerged. For those who believe in the critical importance of natural wilderness areas to the future health and well-being of our planet, and who work to protect these areas, the term “urban wilderness” causes much consternation. It is very possible that such usages will create confusion in the mind of urban dwellers—now the majority of the global population—as to what “real” wilderness is. By definition, cities cannot be “wilderness” technically. However, elements of wilderness can and should be present in and around urban areas to enhance human health and quality of life. Rather than calling this urban wilderness, however, the term should be “urban wildness (野境).” This paper presents a rationale for using “urban wildness” to replace “urban wilderness,” citing some of the characteristics and benefits of urban wildness; provides case studies of urban areas that are working successfully with the concept; elucidates the role and challenges of wild animals (especially predators) in urban areas; and finally, gives an example of an engagement and educational methodology connecting urban dwellers to wild values and benefits.

KEYWORDS

Urban Wildness; Urban Wilderness; Human Wildlife Co-existence; Biodiversity; Wilderness; City Nature Challenge; Environmental Education; Nature in the City; Predator–Prey

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1 引言

“荒野”（wilderness）一词具有多种含义。在最普遍的用法中，“荒野”往往是指“非管控的”自然区域，通常是不宜居的、未开发的偏远之地[1]。该术语在自然保护领域中还有三种更具针对性的含义：1）在生物学意义上，指“那些很少或不受人类直接影响的、自然系统相对完整的自然区域”；2）在人类社会意义上，指“未被人类开发、可提供维持生命的生态系统服务，且/或具有神圣/图腾意义，远离人类文明和人类聚居点、可于此静处”[2]的区域；3）亦指一种自然保护地类型[3]。以上4种含义皆体现出“荒野”的一个共性，即远离会对自然产生重大影响的人类聚居点。

由世界自然保护联盟（IUCN）的世界保护区委员会（WCPA）制定的《自然保护地管理分类指南》（简称《指南》）正式采用“荒野”这一术语指代自然保护地的一种类型：“荒野区域”（wilderness area），分类编号为“1b”，指大规模的、未被改变或被轻微改变的，保留着自然原貌和影响力，没有永久或明显人类聚居点的地区；这类区域的自然条件需要加以保护与管理。[4]

在中国，越来越多的人呼吁将荒野视为新的国家公园体系的重要组成部分[5]，相关评判标准将荒野视为人类永久性建成环境（如城市文明）的对立面。而“荒野”一词最常见、最专业的用法均强调了荒野区域的“偏远”（remoteness）特征[6]，而中文语境下使用的“城市荒野”（urban wilderness）一词显然未体现这一点。此外，对于那些重视自然荒野区域对促进地球现在与未来健康作用的人士而言，“城市荒野”一词使他们对什么才是“真正的”荒野感到困惑。笔者认为，作为对人类福祉至关重要的资产，应当明晰荒野的概念，而非制造令人困惑的术语。

既然“偏远”是国际对荒野特征达成的重要共识，并且城市追求聚合而非远离，那么城市中就不可能存在严格意义上的荒野。但是，荒野的某些元素或品质可以出现在城市中——尤其是那些具备完善规划的理想城市。具体来说，这些元素可以是（存在于水体、森林系统、沼泽、草甸等中的）高效的自然过程、出众的自然美、标识性的野生动物（甚至是捕食者）、高质量的生物多样性和生态系统服务，有时甚至是静处（图1）。这些荒野元素可以且应该呈现在城市区域中，以提高人类健康和生活品质。基于此，“城市野境”（urban wildness）或为更恰当的

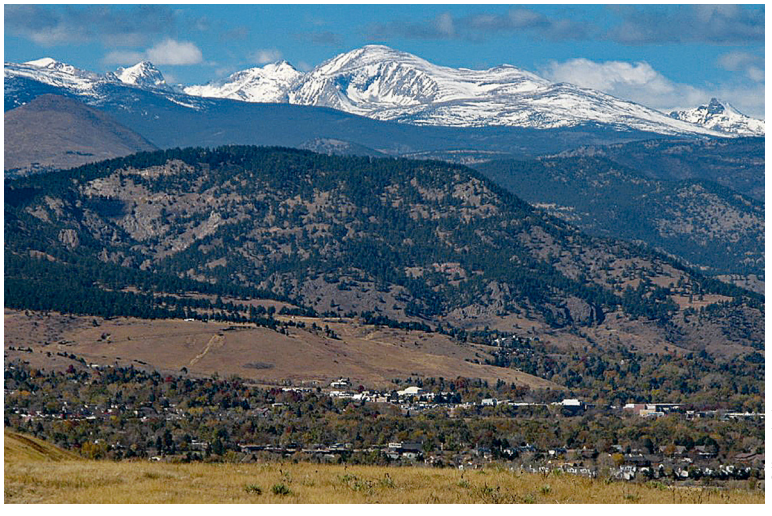
1 Introduction

The term “wilderness (荒野)” is used in varying ways. In general public use, it is often a generic descriptor referring to an area of “uncontrolled” nature, not always human-friendly, in an uncivilized and always remote place[1]. There are three ways it is used more specifically in terms of nature conservation: as a biological descriptor (areas of nature with little or no direct human impact and with natural systems as intact as possible); in relationship to human society as “an area with no human development that supplies life-supporting ecosystem services and / or to which is assigned sacred / totemic values, remote from civilization and settlements in which one can experience solitude (静处)”[2]; and as a specific type of protected area[3]. Important to note that in all the four usages of the term “wilderness,” the common factor is that wilderness is remote from significant human settlements.

The usage of the term as a specific type of protected area was formally acknowledged in the Guidelines for Applying Protected Area Management Categories of the World Commission on Protected Areas (WCPA) of the International Union for the Conservation of Nature (IUCN). Protected area “Category 1b” is called “Wilderness area” and defined as: “Usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.”[4]

Further, in China, there is a growing call for wilderness to be regarded as an important element of the new national park system[5], further adding to the criteria that wilderness implies remoteness from established, permanent human infrastructure such as in urban civilization. Considering that the most common and professional usages of the term “wilderness” refers to the importance of remoteness for wilderness areas[6], it appears clear that the term “urban wilderness” is not consistent with its international usage. Further, for those who believe in the critical importance of natural wilderness areas to the current and future health of our planet, the term “urban wilderness” even causes consternation because it is highly possible for the term to create confusion as to what “real” wilderness is. For an asset that is so critical to human well-being as is wilderness, clarity (rather than confusion) needs to be reinforced.

Because “remoteness” is an internationally agreed-upon, important characteristic of wilderness, and because cities are characterized by proximate experience, not remote, cities, technically, cannot be or contain wilderness. However, they can easily—and preferably, for a well-planned and desirable city—exhibit elements or qualities of wilderness. For example, such elements could be high-functioning natural processes (as found in water bodies, forest systems, marshes, and meadows); superior natural beauty; representative wildlife (even predators); high-quality biodiversity and ecosystem services; and sometimes even solitude (Fig. 1). These elements can and should be present in urban areas to enhance human health and quality of life. Rather than calling this urban wilderness, however, the term should be “urban wildness (野性).” Such a clarification is also entirely consistent with the “Three



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1

1. 美国科罗拉多州的博尔德市风貌。博尔德市及其毗邻的博尔德郡其他城镇的永久保护地面积占比达67%。这些区域受到美国联邦政府、科罗拉多州、郡和市的法律法规的保护。
2. 美洲狮经常在博尔德市出没
3. 孟买的市民环保主义者，亦是为保护野性自然而四处奔走的积极分子，通过创新公共教育来提升这个正在不断扩张的城市的公众意识。该创意地图由活动艺术家罗翰·查克拉瓦西创作，并获得市民团体“目标气候实验室”的赞助支持。

1. Boulder City (pictured here in its landscape) and surrounding Boulder County, Colorado, USA, have permanently protected areas covering 67% of the combined area of the city and county. These areas are protected under different laws and regulations the city, the county, the state of Colorado, and the US federal government.
2. Mountain lions are frequent visitors inside the city limits of Boulder.
3. Mumbai's citizen conservationists, strong and persistent activists for wild nature, increase public awareness across this sprawling city through innovative public education. The map was created by activist artist Rohan Chakravarthy and supported by another citizen collective, Purpose Climate Lab.

措辞。而这也非常符合“生物多样性保护和可持续利用的三个全球条件（3Cs）”的描述。3Cs是一个国家尺度的景观评估 / 实施工具，用来评价土地利用驱动因素与人类压力，评价对象范围从高度碎片化的景观（C1），到需要更好的保护地和连接系统的碎片化景观（C2），再到需要良好保护和管理的、偏远的大面积完整荒野区域（C3）。可见，城市野境隶属于C1[7]。近年来3Cs这一方法论已在中国得到应用。[8]

2 城市野境案例

2.1 博尔德市

美国科罗拉多州的博尔德市是一个小城市，拥有约12.5万名居民，以及就读于科罗拉多大学的约3万名学生。博尔德市恰好坐落于大平原与中落基山脉山脚的交汇处，距离州首府丹佛市的主城区仅50km。在诸如“最令人向往的小城市”“最佳居住地”，甚至是“最幸福的城市”等全国范围的调查中，博尔德市总是榜上有名。

博尔德市的地理区位和面积使得城市野境的元素较为常见：在这座城市中，猛禽（鹰和雕）、狐狸、郊狼、猞猁，甚至是黑熊和美洲狮等野生动物经常出没（图2）。这些野生动物既带来了巨大好处，也带来了明显挑战，后文将展开详细讨论。

此外，该市还有意识地制定了相关规划，通过具体行动和规划条例来增加城市野境。博尔德市是美国第一个市民通过投票（1967年）同意以征税来建立专项基金，以购买和保护城市内部及周边自然区域的城市。该市还与周边的博尔德郡的城市合作，共创造了面积占比高达67%的自然保护地（包括州和联邦自然保护地在内）。这一成就还超出了“自然需要一半”计划——这是一个全球性行动倡议，旨在为所有地球生命的存续而尽可能地保护自然——提出的目标[9]。博尔德市还是美国第一批用步行街和花园取代城市主干道的城市之一（1977年）。另外，博尔德市于1959年通过了一项命名为“蓝线”的法令，规定了城市供水海拔高度的限制，以保护自然状态和能够俯瞰城市的山麓景观。其他相

Global Conditions for Biodiversity Conservation and Sustainable Use (3Cs)," a national-scale landscape assessment / implementation tool to evaluate land-use drivers and human pressures utilizing a spectrum from highly fragmented landscapes (C1), to fragmented landscapes needing better protected area and connectivity systems (C2), to large, remote, intact wilderness areas requiring good protection and management (C3). Urban wildness is a stated condition of C1[7]. This methodology has recently been applied in China.[8]

2 Examples of Urban Wildness

2.1 Boulder City

Boulder, Colorado, USA, is a small city of some 125,000 residents plus 30,000 students at the University of Colorado. It is nestled at the exact junction of the Great Plains and the first uplift of the central Rocky Mountains, just 50 km from the major urban area of the City of Denver, the state capital. The city always



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receives high recognition in national surveys such as "The Most Desirable Small City," "The Best Place to Live," and even "The Happiest City."

Boulder's location and size is where one would expect to easily find elements of urban wildness. Wildlife abounds in the city, with frequent sightings of raptors (hawks and eagles), foxes, coyotes, lynx, and even black bears and mountain lions (Fig. 2). Such wildlife brings numerous benefits and also obvious challenges, as discussed in the next section.

Besides, the city has also consciously planned to increase its urban wildness with specific actions and planning regulations. Boulder was the first city in the United States whose citizens voted (in 1967) to tax themselves to create a fund to purchase and preserve natural areas in and around the city. The city also works with surrounding Boulder County and, together with State and Federal protected lands, the overall county is comprised of an impressive 67% protected nature. This accomplishment exceeds the goal called for by Nature Needs Half[9], a global call-to-action to protect sufficient nature for the survival of all life on earth. Boulder was also one of the first cities in the USA to replace a main roadway with a pedestrian mall and gardens (in 1977). In addition, it passed an ordinance in 1959 called "the Blue Line" that set an elevation limit to where the city water would be supplied, thus controlling the natural condition and view-scape of the foothills that overlook the town. Numerous other planning ordinances also contributed, such as controlling the height of buildings, limiting the amount of structural growth per annum, providing affordable public transportation, and sourcing green materials for construction.[10]

关规划条例还包括控制建筑高度、限制每年的结构性增长量、提供廉价的公共交通，以及采购绿色建筑材料等方面。[10]

2.2 Mumbai

Mumbai, India, in contrast, seems not the place one would expect to find urban wildness. With a population over 20 million, the majority living in large urban slums, this financial, commercial, and entertainment capital of India is the world's 7th largest city[11]. However, despite the threats to wildness posed by such a sprawling metropolis, a range of urban wildness characteristics persist due only partially to prescient urban planning and nature management, and more so to very persistent citizen environmental activism. For just one example of many, the "Ministry for Mumbai's Magic" is a youth collective working to protect Mumbai's biodiversity, producing educational materials, and opposing development that destroys nature in the city. One of their public education projects was an innovative map (Fig. 3), with a mission to bring innovation and experimentation to solving the climate crisis through public mobilization and storytelling.

Mumbai is one of the few cities in the world that contain an entire national park within its urban boundaries. Covering an area of 87 km^2, Sanjay Ghandi National Park's (SGNP) is largely forested but with significant human recreational areas, cultural sites, and nature trails. With 2.5 million annual visitors, SGNP is one of the world's most heavily-used national parks. Its wildlife famously includes some 40 healthy free-roaming leopards (*Panthera pardus*)

2.2 孟买

相较之下，印度孟买是一座似乎很难发现城市野境的城市：孟买是印度的金融、商业和娱乐中心，也是世界第七大城市，这里的人口超过2 000万[11]，但大部分居住于城市大型贫民窟中。而现实情况恰恰相反，尽管孟买的大都市扩张式发展对野境保护构成了威胁，一系列的城市野境特征依然存在。这既得益于拥有先见之明的城市规划与自然管理对策，更是源于坚持不懈的市民环保运动。其中，"孟买魅力部"是一个致力于保护孟买的生物多样性、制作教育素材、反对破坏城市自然的开发行为的青年团体，他们开展的"创意地图"公共教育项目（图3）旨在通过公共参与和故事讲述的方式探寻解决气候危机的新方法。

孟买是当前世界上少有的、在其内部包含了一整个完整国家公园的城市之一，即桑贾伊·甘地国家公园（SGNP）。SGNP占地面积87km^2，公园内森林茂密，同时包含重要的娱乐区域、文化遗址和自然步道。



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4. 火烈鸟在印度孟买东南方的塞里红树林公园中觅食。

4. Flamingos feeding in the Sewri Mangrove Park, SE Mumbai, India.

SGNP每年接待游客达250万人次，是世界上访问量最高的国家公园之一。公园中生活着大约40只健康状况良好、自由出没的花豹（*Panthera pardus*），它们以公园内丰富的小型动物为食，同时也捕食邻近社区的家养宠物与流浪动物。[12]除了种类繁多的鸟类外，还有172种蝴蝶，鳄鱼、眼镜蛇与蟒蛇等爬行动物，以及多种羚羊、鹿、豪猪、椰子猫、鬣狗、狐蝠等。[13]

孟买由7座独立的岛屿构成。每年11月至次年5月，著名的咸水涉禽大火烈鸟（*Phoenicopterus roseus*）与小火烈鸟（*Phoeniconaias minor*）都会迁徙至此，进入孟买的水道和红树林中觅食。而在2020年4月，由于新冠肺炎（COVID–19）疫情的隔离措施，导致人类活动减少，火烈鸟的数量也因此增至15万只（图4）[14]。

野境也体现在当地对自然和生物多样性进行非工业化的传统利用中。如在孟买这样的大城市中，人工捕鱼社区可以说是一种奇特的存在：该社区生活着约500万科利族人，他们的小规模捕鱼活动已有500多年的历史，这一传统在不断升级的发展压力下变得岌岌可危。这些压力包括：拟建的沿海干道、气候变化导致的水温升高、过度捕捞、严重的环境污染。[15]

2.3 北京

虽然背负着空气污染的困扰，但北京还是中国北方“最绿”的城市。从CBD中的小型公园与庭院到西部山区，这座城市拥有丰富的生物多样性与多种多样的栖息环境，包括湿地、草地、森林与大型公园。与此同时，北京恰好位于世界九大候鸟迁徙路线之一上，拥有500多种鸟类，约占全中国鸟类种类的三分之一。[16]北京的鸟类丰富度在所有G20国家的首都中排名第二[17]。

that feed on abundant small prey in the park along with domestic pets and feral animals in adjacent neighborhoods.[12] In addition to a wide range of birds are 172 species of butterflies, reptiles such as crocodile, cobra, and pythons, and many species of antelope and deer, porcupine, palm civet, hyena, langur, flying fox, and more.[13]

7 separate costal islands were eventually joined to create Mumbai. A distinct and celebrated marine-related avian feature is the greater (*Phoenicopterus roseus*) and lesser (*Phoeniconaias minor*) flamingos that migrate into Mumbai's waterways and mangroves to feed from November to May, numbering as high as 150,000 during the reduced human activity of the COVID-19 lockdown in April, 2020 (Fig. 4)[14].

Wildness can also be evident through non-industrial, traditional uses of nature and biodiversity. Unusual within such a large city as Mumbai, an artisanal fishing community still exists, at the center of which are the Koli ethnic minority numbering some 5 million people. They have practiced small-scale fishing for over 500 years and precariously persist despite the ever-escalating pressures of development. Such pressures include a proposed major coastal road; increasing water temperatures due to climate change; overfishing; and, of course, significant pollution.[15]

2.3 Beijing

Beijing, China, while it continues to reduce its sometimes high-level of air pollution, is the greenest city in northern China. From small parks and gardens in the CBD to the western mountains, the city is rich in biodiversity and diverse habitats such as wetlands, grasslands, forests, and large parks. Located on one of the 9 major migratory bird migration routes in the world, Beijing has counted more than 500 bird species, about one-third of all bird species in the entire country.[16] In a rating of major cities in all G20 countries, Beijing ranks second in bird diversity[17].

位于北京北部的奥林匹克森林公园不仅是城市休闲运动场所，也拥有可观的植被覆盖率，是公认的亚洲最大的城市绿洲。[18]占地680hm²的园区中覆盖了大量的森林、草甸、人工湖，还有一处68hm²的人工湿地；在公园南区共观察记录鸟类170余种。[19]而在北京市南部的南海子麋鹿自然保护区内则散养着大量的麋鹿（*Elaphurus davidianus*）——这一被《IUCN濒危物种红色名录》列为野外灭绝的物种。在中国生态修复和生态系统重建过程中，南海子的种群成功助力了将麋鹿放归至其他野外区域。[20]除此之外，北京还有很多其他野生动物，尤其是在西郊山区，包括野猪（*Sus scrofa moupinensis*）、西伯利亚狍（*Capreolus pygargus*）、猪獾（*Arctonyx collaris*）、松鼠和花栗鼠。而华北豹（*Panthera pardus japonensis*）也在北京西南山区重新开始自然繁衍。[21]

近年来，自然教育与城市生物多样性（野境元素之一）的概念在北京愈发普及。过去，普通家庭仅仅会选择去动物园和植物园观察动植物。如今，人们会倾向于选择前往更具野性的地方观察鸟类与各种野生动物，体验城市野趣。另外，有人提议北京的每个城市公园中都预留“10%的自然带”，任由植物自由生长而不被砍伐或清除，野生动植物也可以在这些地方繁衍生息。[16]也有人提出建立城市生态连接／野生动物迁徙廊道，即在六环外设置一条“野生环路”，将城市中各种陆地与河岸栖息地连接起来——这既能保障野生动物的活动，也能通过限制城市居民的游憩范围来提高他们对城市丰富的生物多样性的认识。[20]

2020年9月，位于北京城市副中心的城市绿心森林公园正式开放。园内78hm²的核心区周围建造了约2m高的绿篱，作为城市中第一块允许自然修复的野性斑块。公园位于京杭大运河南岸，最终面积预计将达到11.2km²，是纽约中央公园面积的两倍。[22]

3 捕食者的问题

人类如何与野生动物共存（特别是与捕食者的共存）是一个复杂且颇具挑战的问题，然而，在城市野境的话题中可以一谈。[23]

当人们讨论“野境”一词时，通常会联想到捕食者—猎物的关系，而这也是自然纪录片常常关注的主题——纪录片中大型动物（如狮子、熊、鹰）会捕食小型动物。这种既引人入胜又令人生畏的现象对于人类而言无异是陌生的，因为大多数人类（尤其是生活在城市中的人）不会自己宰杀食物，而是直接购买已包装好的、预加工的、随时可以烹煮的

The Olympic Forest Park in the north is not only a place for sports and recreation, but also contains significant natural coverage and is considered the largest urban green landscape in Asia.[18] Its 680-hectare area is covered by significant forests, meadows, and man-made lakes, plus a constructed wetland of 68 hm². In its southern section, more than 170 species of birds were recorded.[19] In the south of the city, Nanhaizi Miludeer Nature Reserve has a major population of milu deers (*Elaphurus davidianus*), a species assessed as extinct in the wild (EW) by IUCN Red List. This population was used to successfully reintroduce the species to wild areas across China in the process of restoring ecological processes and re-establishing ecosystem integrity.[20] Much other wildlife exists in Beijing especially in the mountains in the western suburbs—such as wild boar (*Sus scrofa moupinensis*), Siberian roe deer (*Capreolus pygargus*),Hog badger (*Arctonyx collaris*), squirrel, and chipmunk. The North China Leopard (*Panthera pardus japonensis*) has also begun to naturally reinhabit the mountains near the southwest area of Beijing.[21]

In recent years, nature education and the concept of urban biodiversity—an element of wildness—is flourishing in this city. In the past, ordinary families would only go to zoos and botanical gardens to view animals and plants. It is now much more common for people to go to wilder places to observe birds and various wild animals and to learn about wildness in the city. A discussion about maintaining a “10% natural zone” in each urban park in Beijing has been initiated, with the purpose of allowing plants there to grow freely without being felled or otherwise eliminated, so that wild animals and plants can thrive in these places.[16]One idea that has been raised is for an urban ecological connectivity / wildlife migration corridor, a “wild ring road” outside the Sixth Ring Road to connect various terrestrial and riparian habitats across the city. This has the potential to support wildlife and, through limited access to city dwellers for recreation, raise awareness of the city’s rich biodiversity.[20]

In September 2020, the Urban Green Heart Forest Park in the sub-capital of Beijing officially opened. Within the project, fences about 2 meters high were built around the core area of 78 hectares, as the first wild patch in the city that allows for natural restoration. Located on the south bank of the Grand Canal, it will eventually cover an area of 11.2 km², twice the size of New York’s Central Park.[22]

3 The Issue of Predators

Human–wildlife co-existence—especially with predators—is a complex and challenging issue, yet a brief summary is germane to the discussion about wildness in urban areas.[23]

When people think about “wildness” it is often related to the predator–prey relationship, frequently the subject of popular nature documentaries wherein larger animals (e.g. lions, bears, hawks) kill and consume smaller animals. This is exotic and often both fascinating and frightening because most humans (especially



5 © Nayan Khanolkar

5. 约40只野生花豹将孟买的SGDP作为栖息地，它们经常捕食狗和猫。
5. Approximately wild 40 leopards reside in SGNP in the center of Mumbai, often preying on dogs and cats.

食材。所以，要理解捕食者在重要自然过程方面的作用，一种方式便是从生态学角度出发。在自然界，为了生存，包括人类在内的所有生物都需要消费其他生物。这就形成了营养级联，一个不同级的生物遵循彼此之间有序的能量转换过程的系统。[24]当捕食行为减少时，自然能量的转换与生态过程的动态互动就被迫中断，导致整体生态系统健康水平的下降。

关于捕食者所带来的影响在大规模实例中体现得最为明显，如黄石国家公园重新引入狼的经典案例，既改善了生态健康，也提高了生物多样性。[25]尽管这样的例子更常见于大型荒野区域的研究中，但这也不失为城市野境话题中一个重要而有趣的元素。在关于城市中的野性自然的讨论中也不常关注捕食的话题。但事实上，如果认可野境的质量对城市区域生态健康的价值，捕食议题就应当得到重视。

在城市环境中，捕食者体型越大，对人类的威胁也就越大。如小型捕食者狐狸（*Vulpes* spp.）很容易适应城市环境，一个健康的狐狸种群能够广泛分布于大部分城市地区（如纽约和伦敦）[26]。这些捕食者并不会对人类构成直接威胁，但会对家养宠物构成威胁。而郊狼（*Canis latrans*）这种适应性极强的大型捕食者几乎见于美国本土所有州和主要城市，其城市种群对家养宠物、低龄儿童与（极少数）成人均构成更复杂的威胁[27]。最后，也是最具挑战性的问题，则与顶级捕食者有关。比如上文提到的SGNP中的花豹（图5），或是见于一些美国西部城市中的美洲狮（*Puma concolor*）等大型野生猫科动物。

简而言之，城市和城郊中的捕食者可以调节其他动物的数量（以及这些动物对土壤与植物造成的影响）——如果不加约束，这些动物往往会引发其他危害。例如，城市中的狐狸会捕食老鼠，从而有助于控制鼠群过多所造成的疾病与食物污染问题；健康的鸟类种群则对调节和辅助蚊子等昆虫的种群平衡非常重要——蚊子常常会携带疟原虫、西尼罗病毒与其他威胁人类健康的病原体；又如孟买SGNP中的花豹，流

urbanized) do not kill their food—they purchase it packaged, prepared, and ready to cook. One way to understand predators' role as an important natural process is to consider it in ecological terms. In nature, everything consumes something else in order to survive (humans are no exception). This forms a "trophic cascade," an assemblage of different levels of ecological complexity regulated in part by the orderly transfer of energy and processes between the different levels—often the consumption of prey by predators.[24] When predation is diminished, the transformation of natural energy and the dynamic interaction of ecological processes are disrupted, leading to a decline in overall ecosystem health.

Large-scale examples of the impact of predators are the easiest to comprehend, such as the highly-studied reintroduction of the wolf to Yellowstone National Park and the resulting improvement in ecological health and biodiversity.[25] While this is much easier to understand when studying a large wilderness area, it is nevertheless an important and interesting element when considering urban wildness. Predation is also a subject not often included in discourse on wild nature in cities. But the reality is that if wildness qualities are considered valuable for ecological health in urban areas, predation is important.

In urban conditions, the larger the predator, the greater the challenge. For example, a smaller predator that adapts easily to urban conditions is foxes (*Vulpes* spp.), and healthy populations can be found in most urban areas within their natural ranges, such as New York and London[26]. These predators pose no direct threat to humans, only to their household pets. Urban populations of coyotes (*Canis latrans*), a larger and highly adaptive predator found in every state and major city in the continental United States, pose a more complex threat to household pets, small children, and (very rarely) adults[27]. Finally, of course, the most challenging issue is with apex predators—those at the top of food chain. Examples are mostly larger wild cats such as the previously mentioned leopards in SGNP (Fig. 5), or mountain lions (*Puma concolor*) in some western American cities.

In very simple terms, predators in urban and suburban areas control the numbers of other animals (and their impacts on soil and flora) which, if allowed to grow unchecked, often cause other damage and issues. For example, foxes in cities prey on rats, among other things, helping control diseases and food contamination caused by overpopulation of rats. Healthy bird populations are important to control and assist the balance of insects such as mosquitos which are often vectors for plasmodium, West Nile virus, and other pathogens dangerous to humans. In the instance of the leopards in Mumbai's SGNP, a significant element of the leopard's diet is feral dogs, an over-abundance of which leads to rabies and other diseases.[28]

Some of the challenges of human–wildlife conflict are met by changing urban infrastructure. One important example is changing how highways are built, in order to accommodate wildlife movements and thus reduce wildlife

浪狗是其主要的食物来源，过多的流浪狗会增加狂犬病和其他疾病的传播风险。[28]

修建城市基础设施时也常常会面临人类与野生动物冲突的一系列挑战。为此，人类往往需要作出改变。如修建高速公路时应考虑野生动物的活动，以减少被车撞死的野生动物以及因避让野生动物而造成的交通事故伤亡数量。洛杉矶正在施工建造的“动物廊桥”便是为了方便美洲狮和其他野生动物安全穿越城市主干道而修建的[29]。

要缓解人类与野生动物的冲突，还需要人类习惯行为方面的改变。例如，美洲黑熊（*Ursus americanus*）在科罗拉多州落基山脉附近社区出没活动日益增多。为了不对其造成伤害，当地居民采用了一种经博尔德市认证的“防熊”户外垃圾箱和堆肥箱来威慑黑熊[30]。博尔德市对该措施进行了严格管理，并对未遵守的居民施以罚款。2017年，博尔德市在黑熊保护区内开具了1 376单罚单，仅对一只具有侵略性的黑熊进行了安乐死。相比之下，科罗拉多州的杜兰戈市（该市具备与博尔德市类似的垃圾箱法令，但并未强制实施）虽然记录在案的违反垃圾箱法令行为有689起、但却只开具了43张罚单，并对25只熊进行了安乐死。[31]科罗拉多大学的研究人员认为这主要是因为市政条例执行力度的不足[32]。在奖励或惩罚机制不健全的情况下，人类极少会改变自身行为；而如若人类不采用这些预防措施，野生动物就会遭殃。

另一个与城市捕食者相关的重要议题是：流浪猫对城市野境品质的负面影响。尽管这类猫科动物捕食啮齿类动物有利于人类健康，但它们对城市中的野生鸟类却构成了极大的威胁。这种威胁虽然不易量化，但其严重影响已被广大研究人员证实。例如，据美国的一项研究估计，每年平均有24亿只野生鸟类被家猫（允许在户外活动）和流浪猫捕杀，且流浪猫的捕杀率是家猫的三倍。[33]不过，经作者观察，虽然当前社会正越来越不提倡家猫在户外活动，但流浪猫的问题更为复杂。自20世纪90年代以来，“TNR”法——捕捉（Trap）、绝育（Neuter）与放归（Return）——已发展为一种能有效控制流浪猫数量的人道方式。TNR法还会为流浪猫接种狂犬病和犬瘟热疫苗。绝育后的猫会以剪去左耳一角作为标记，原地放归到一个由志愿者继续提供食物并给予照顾的“族群”中。[34]但从根本上来说，改变人类行为才是最重要的，如通过城市垃圾管理措施来阻止流浪猫觅食。

总之，人类与捕食者的福祉是息息相关的，因为人类需要健康的自然，而健康的自然又需要捕食者。捕食者对生态系统具有很强的自上而下的营养级影响。与试图达到相同效果的人工干预相比，狼群的引入轻而易举地帮助黄石国家公园修复了生态系统[35]，蟹类维持珊瑚礁平衡亦如是[36]。在城市中，捕食者能够控制害虫种群数量，减少自然植被的破坏，并通过降低动物对土壤和栖息地的不良影响而有望促进高品质的、完整的野性自然。捕食者对人类的精神层面也发挥着重要作用，是激发

roadkill and decrease deadly traffic / wildlife collisions. An example is the wildlife-crossing bridge under construction in Los Angles to facilitate movement across major highways by mountain lions and other wildlife[29].

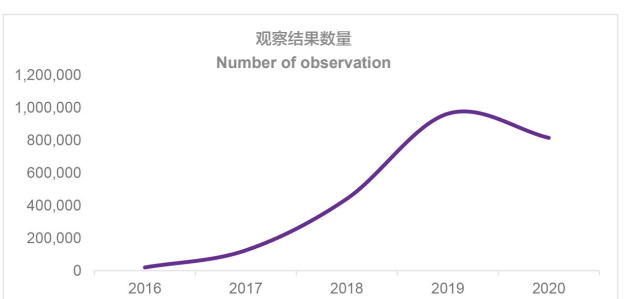
Other challenges are met by changing human habits and behaviors. American black bears (*Ursus americanus*) are increasingly common food-foragers in communities within Colorado's Rocky Mountains. A deterrent required for use by residents are city-certified “bear-resistant” outdoor trash and compost bins[30]. Boulder has strictly managed this system with fines for residents who do not comply. In 2017, the City of Boulder levied 1,376 fines within the Bear Protection Zone and needed to euthanize only one aggressive bear. In contrast, Durango, Colorado (which has a similar garbage ordinance to Boulder, but no proactive enforcement) documented 689 trash violations, levied only 43 fines but euthanized 25 bears.[31] Researchers at the University of Colorado attribute the high number of bears euthanized to lax enforcement of municipal regulations[32]. Humans seldom change their behavior unless they are incentivized or penalized. If humans fail to comply with preventative measures, wildlife suffers.

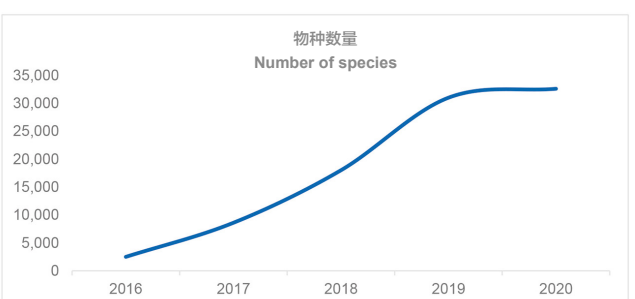
Another important subject to note about urban predators is the negative impact of free-roaming cats on the quality of urban wildness. While such felines benefit human health by preying on rodents, they also have a highly negative impact on wild birds. Although not easy to measure, a severe impact is widely accepted by researchers. One study in the United States estimated that a median number of 2.4 billion wild birds are killed per year by both owned (and allowed to roam) and unowned (feral) cats. The unowned cats accounted for up to three times the kill rate compared to owned cats.[33] The authors observe that increasingly it is socially-discouraged for cat owners to allow their domestic pets to roam outside of the home. The matter of feral cats is more complicated. The process of Trap, Neuter, and Return, or “TNR,” became popular in the 1990s as a humane way to control the population of feral cats. With TNR, the cats are also vaccinated against rabies and distemper. Their left ears are slightly clipped for identification as a sterile cat, and then they are released into a “colony” that is usually managed by volunteers.[34] But ultimately there also needs to be change in behavior, for example with how people manage their garbage in urban areas, to discourage feeding by feral cats.

In summary, the well-being of humans and predators is linked because people need healthy nature, and healthy nature needs predators. Predators exert strong top-down, trophic influences on ecosystems. In contrast to man-made interventions attempting to accomplish the same, wolves have effortlessly helped restore ecosystems in Yellowstone National Park[35] and crabs maintain equilibrium in coral reefs[36]. In urban areas, predators keep pest populations in check, limit damage to natural vegetation, and make possible higher-quality, intact wild nature by reducing animal impacts on soil and habitat. Predators are also significant to the human psyche and spirit, frequently captivating human imagination and inspiring art.[37] Predators are an essential aspect of a healthy









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6

6. 2016~2020年CNC总体数据变化，包括了参与城市、观察者、观察结果，以及动植物物种总数。
7. 从参与竞赛的城市与人员数量来看，CNC是目前在全球范围内开展的最成功的城市公民科学活动。

6. Collective numbers from the CNC during years 2016 ~ 2020 include total numbers of cities, observers, observations, and species (plants and animals).
7. According to CNC metrics of number of cities and participants engaged, CNC is the most successful globally-deployed urban citizen science initiative.

想象与启迪艺术灵感的源泉。[37]捕食者是构建健康生态系统（无论是在荒野还是城市环境）的重要组分；没有它们，生态系统就会残缺，其所能提供的维持生命的生态服务也会被削弱。

ecosystem—in wilderness or in cities—and without them the system is impaired and therefore less able to provide life-supporting ecological services.

4 建立城市居民与野性自然的密切联系

据联合国估计，2050年世界城市人口比例将从2020年的56.2%上升至68%（届时全球人口将达到97亿）。[38][39]随着城市人口增长，人类与自然的联系将会越来越少——这一点既体现在当前突出的人类健康问题中[40]，也是小说、音乐作品和电影故事情节等文化作品常常探讨的主



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7

4 Engaging Urbanites With Wild Nature

By 2050, the United Nations estimates a world population of 9.7 billion, of which 68% will live in urban areas—an increase from 56.2% in 2020.[38][39] As the urban population increases, it is unsurprising that people are more disconnected from nature—a finding evident in human health issues[40] as well as in cultural products such as novels, song lyrics, and movie storylines[41]. To address this disconnection, the citizen science web platform iNaturalist used in the annual City Nature Challenge (CNC) has emerged as a leader in urban engagement with wild nature. Initiated in 2016 by the Natural History Museum of Los Angeles County and California Academy of Sciences, the first CNC was an 8-day competition between Los Angeles and San Francisco. The next year, 16 cities in the United States participated, and in 2018 the CNC comprised 68 cities internationally. By 2020 the CNC involved 244 cities and engaged 41,000 people internationally (Fig. 6).[42]

The CNC is typically a competition to determine which cities have the most “wild” nature, to engage the most people, and to document species of wild plants and animals. It occurs in two parts. The first is a 4-day “bioblitz,” followed by a 6-day species identification period. Participants venture throughout their designated geographic boundary to document wild plants and animals. They upload observations to the iNaturalist platform along with their best guess at the species name, the date and location of the observation, and any other relevant

题[41]。为解决这一问题，发起一年一度“城市自然挑战赛”（CNC）的公民科学网络平台“iNaturalist”成为了建立城市与野性自然密切联系方面的领军者。2016年，第一届CNC由洛杉矶自然历史博物馆与加州科学院合作发起，这是一个在洛杉矶和旧金山之间举办的为期8天的竞赛；次年，又吸引了16个美国城市加入；2018年，参与的国内外城市达到68个；到2020年，参与的城市已达到244个，吸引了超过4万名参与者（图6）。[42]

CNC的竞赛内容包括评选出最具“野性”自然的城市、最大限度地鼓励公共参与，以及记录野生动植物物种。竞赛分为两大部分：为期4天的“生物限时寻”与为期6天的物种鉴定期。参与者需要在指定区域内探寻、记录野生动植物，然后将各自的观察结果上传至iNaturalist平台，并附上他们判断的物种名称、观察日期与地点，以及其他任何观察到的细节。iNaturalist平台的会员会对这些上传的信息提供反馈意见，以识别观察者观察到的物种。iNaturalist和CNC使不同年龄、背景和能力的人都参与到公民科学中来（图7）。[43]

2020年，CNC迎来了特殊的一年。4月，在即将开展“生物限时寻”活动的几周前，新冠肺炎疫情开始肆虐。为此，国际组织者们决定CNC将采取合作型赛制（而非竞争型），强调自然的治愈力并鼓励人们积极探索。[44]而“丹佛市—博尔德市”路线的组织者及荒野基金会都借此机会，向市民宣传如何在享受自然的同时保持安全社交距离、如何与野生动物保持适当距离、如何减轻自然步道系统人流量过大等问题。

所有需要面对面参与的团体活动均被取消了，组织者转而开发了一系列的虚拟产品和资源，包括iNaturalist在线培训会与PDF手册、物种识别虚拟派对，以及户外探险安全指南[45]。通过这些活动，参与者了解到他们自己的花园和所在社区其实是充满了野性自然的复杂生态系统。组织者表示，CNC的这些变化尤受家长和老师的欢迎，他们希望孩子们能够参与到安全的户外教育活动中。即使受到全球疫情的影响，2020年CNC的参与人数仍较往年有所增加（总数超过4.1万人，2019年为3.5万人）。2021年，鉴于情况，CNC将继续举行这种合作型赛制。

5 结论

严格来说，城市荒野并不存在，但城市野境可以且应该被视为是衡量城市区域健康、宜居程度的标准之一。在缓解气候变化、维持生物多样性、防止疫情蔓延的需求日益紧迫的今天，野性自然在应对这三大生存挑战方面展现出了史无前例的重要意义。[46]能响应气候变化与生态韧性的人类工程技术固然重要，但其在成本效益、缓解效力与生态服务方面都不及野性自然。[47]

除了以上三大生存挑战外，在城市内部与毗邻区域的野性自然还能创造出极佳的“绿意”，吸引企业入驻和市民聚居。城市野境为城市提供的健康效益已被广泛研究并不断得到证实[48]。此外，城市野境的绿意与其提供的多样的游憩机会往往还能吸引高收入的居民前来定居，从而创造更多商机、增进税收[49]。相关研究也明确指出，城市森林公园距离居民区越近，其对城市经济与福祉的贡献也就越大。[50]

details about the sighting. Once data are uploaded, other members from the iNaturalist community provide feedback on the identification, confirming the observer's guess or offering an alternative. iNaturalist and the CNC enable people of all ages, backgrounds, and abilities to participate in citizen science (Fig. 7).[43]

The 2020 CNC was unique because the COVID-19 pandemic surged in April just weeks before the "bioblitz" was scheduled. The international organizers responded by modifying the CNC into a collaborative (rather than a competitive) event that emphasized the healing power of nature and encouraged its celebration.[44] The Denver–Boulder organizers, including the WILD Foundation, used this opportunity to educate residents on: how to enjoy nature while social-distancing; how to maintain appropriate distance to wildlife; and how to reduce pressure on overcrowded nature trail systems.

All in-person group events were canceled, and a range of virtual offerings and resources have been developed, including iNaturalist training webinars and PDF guides, a virtual party for species identification, and guidelines for safely venturing outdoors[45]. Through these, participants learned that their own gardens and neighborhoods are complex ecosystems teeming with wild nature. Organizers reported that these changes in the CNC were especially popular with parents and teachers eager to have safe outdoor educational activities for children. Even under a global pandemic, the 2020 CNC had an increase in participating numbers (more than 41,000, up from just over 35,000 in 2019). For 2021, the CNC will continue with this collaborative structure until the COVID-19 pandemic is contained.

5 Conclusion

Although urban wilderness per se does not exist, urban wildness can and should be considered a valuable aspect of healthy and desirable urban areas. In modern society, with important and pressing demands to combat climate change, stop biodiversity loss, and avert further pandemics, wild nature has never been more important because it addresses all the three existential challenges.[46] Human-engineered technological response to climate change and ecological resilience is important, but it is neither as cost efficient nor as effective as the mitigating power of wild nature and its ecological services.[47]

In addition to addressing these three existential challenges, wild nature in and immediately adjacent to urban areas also creates a highly desirable "green atmosphere" that attracts businesses and people to live in such a city. The health benefits provided by wildness in urban areas have been widely researched and continually confirmed for many years[48]. In addition, a green atmosphere and the diverse recreational opportunities it provides attracts new, often higher-income residents, leading to more businesses and improved tax revenue[49]. Other studies clearly indicate that the closer urban forest parks are to residential areas, the greater their amenity value to the city's economy and well-being.[50]

中国似乎已意识到城市野境的重要性，并采取了有力措施以确保更多城市居民能够享受到这类资源的益处。除了前文所探讨的北京案例外，还有许多令人赞叹的高品质案例值得一提，其中，贵阳花溪国家城市湿地与阿哈湖国家湿地公园，都是将城市中被忽视与被污染的河岸与湿地转变为城市河流公园的经典案例。这些公园与其他公园一样，在调节与改善城市环境价值方面发挥着重要作用，尤其是在改善生物多样性、净化水体与空气、创造游憩设施，以及美化风景方面。[51][52]同样，位于六盘水市中心、占地面积90hm^{2}的明湖湿地公园已由曾经的工业遗址转变为今天的绿洲，并在2013年被正式指定为国家湿地公园。[53]这样的城市湿地公园（UWPs）遍布全国，正成为越来越多学者的研究对象。[54]在作者看来，中国UWPs的不断增加现象具有全球代表性，即通过修复与复兴城市河岸湿地创造城市野境正受到世界各地区的广泛重视。

荒野区域远离城市，对于缓解上述地球生命所面临的生存挑战至关重要。随着城市化的不断推进，城市野境的重要性也同荒野一样与日俱增，只是城市野境与城市居民的关系更加密切。除了本文简述的诸多效益外，自然所提供的深邃之美和启智作用对维系人类精神活力与创造力而言也是至关重要的。**LAF**

China appears to understand the importance of wildness in urban areas and has taken great strides to assure that the benefits of such a resource are increasingly available to city residents. The case study of Beijing was previously discussed and, in closing, a brief mention should be made of a few other impressive examples. Many exist, and the province of Guizhou is just one example of such high standards. The Huaxi National Urban Wetland Park and Ahahu Wetland Park are two projects in Guiyang where neglected and polluted riparian and wetland areas in the city were transformed into model urban river parks. These parks and others like them play and important role in regulating and improving the environmental values of their urban area, typically such things as biodiversity, water purification, air purification, recreation, and scenic beauty.[51][52] Similarly, Liupanshui Minghu Wetland Park, a 90-hectare oasis in the middle of the city, once an industrialized site, was officially designated as a National Wetland Park in 2013.[53] Such Urban Wetland Parks (UWPs) exist across the country and are the subject of increased scientific research.[54] In the opinion of the authors, China's proliferation of UWPs could represent one of the world's most extensive national examples of restoring and reviving urban riparian and wetlands to create urban wildness.

Wilderness areas are remote from cities and are of essential importance for mitigating the previously mentioned, existential challenges to life on earth. Because our planet is increasingly urbanized and this trend will continue, urban wildness is therefore of growing importance for the same reasons as wilderness, but in a manner more targeted to city dwellers. In addition to the many benefits briefly summarized in this paper, the profound beauty and inspiration provided by nature is of supreme importance to the vitality and strength of human spirit. **LAF**

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