

顺水而为： 武汉长江主轴滨水公园

FORGED BY FLOODS: WUHAN YANGTZE RIVERFRONT PARK

1 项目背景和问题

自人类文明伊始，流经中国五分之一陆地的长江就被喻为哺育了中国历史、文化和经济的母亲河^[1]。然而数千年来，破坏性洪水的频发也不断警示沿岸居民和城市，江水的威力不容小觑。近几十年来，依靠工程技术的巨大进步，人们在上游修筑堤坝、加高堤防，降低了毁灭性洪水事件的风险，提高了滨水地区的安全性。然而气候变化却不断以更为严重的破坏性后果挑战着“工程加固即可高枕无忧”的观念。持续的洪水事件表明，这条江水是不可“驯服”的^[2]，因此应当采取更多与自然协作的新策略，而非与之对抗。

1 800多年来，武汉的地方文化始终与长江密不可分。随着武汉的前身即武昌和汉阳在地势较高处建立起古代聚居地，长江便开始滋养这片土地上的人们，并为其提供了可抵御外来入侵的天然屏障。武汉人民依水而居，靠江饮水，并利用肥沃的沉积江滩进行耕种，同时开展商贸活动，城市日渐繁荣，工业也得以发展。不过，与这些福祉相伴而来的还有破坏性洪水等自然灾害——随着时间的推移，武汉市与河流所形成的共生关系在工业化、快速城镇化和堤防的不断加高中被阻断。一个多世纪的工业发展和城市扩张使滨水地区的环境状况不断恶化，不仅切断了人们与河流的联系，也破坏了自然栖息地，加剧了水体污染。

近年来，武汉与长江不断走向和解，一座沿防洪堤而建的传统滨水公园取代了原本废弃的工业设施。在三层防洪堤的保护下，动态变化的河漫滩演变成了一处公共空间。由于不断受到水位涨落的影响

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摘要

中国武汉长江主轴滨水公园项目的演变凸显了全世界众多滨水城市共同面临的复杂问题：城市化、发展、韧性危机和生态退化。这一项目也强调了在解决所有这些经常冲突的问题时，公共空间为何能成为关键的突破口。

通过对16km长的滨水景观的重新规划，武汉正在实现与季节性洪水的共生，并塑造了依托洪水创建公共空间的新范例。这种与自然协作而非对抗的策略让使用者能够了解和欣赏复杂的河流动态。长江主轴滨水公园的规划方案旨在利用自然过程的力量来培育丰富的区域生态、提升生态系统服务、提高公众健康和增加休闲设施。

基于广泛的公众参与过程和众源数据，重新设计的公园保护了沿河分布的象征着武汉工业遗产和城市历史的工业基础设施及其他元素，强化了这座城市的文化身份。升级后的长江主轴滨水公园力求打造一个具有社会包容性、文化特性和生态价值的滨水空间，并展现武汉这座真正与水共生的城市的独特魅力。

关键词

滨水；韧性；适应性再利用；生态；城市洪涝；公众参与

ABSTRACT

The evolution of the Yangtze Riverfront Park in Wuhan, China highlights what many waterfront cities around the world are facing with respect to converging forces of urbanism, growth, resiliency, and ecological degradation. This site emphasizes why the public realm is a critical component in addressing all of these often-conflicting issues.

By re-envisioning the 16-kilometer-long riverfront landscape, Wuhan is creating a new paradigm for its parks by embracing flooding as a regular occurrence and a driving force in the shaping of its public realm. This strategy of working with Nature and not against it allows visitors to understand and appreciate the river's complex dynamics. The proposed development of the Yangtze Riverfront Park aims to harness the power of natural processes to nurture a rich regional ecology, improve ecosystem services, and enhance public health and recreational amenities.

Informed by an extensive public engagement process and crowdsourced data, the redesign of the park reinforces Wuhan's cultural identity by preserving decommissioned industrial infrastructure and other artifacts along the river that symbolize the city's industrial legacy and urban history. The vision for an updated Yangtze Riverfront Park strives to create a socially inclusive, culturally relevant, and ecologically meaningful waterfront that emphasizes Wuhan's identity of living authentically with an ever-changing river.

KEYWORDS

Waterfront; Resilience; Adaptive Reuse; Ecology; Urban Flooding; Outreach and Engagement

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1. 生活仍在继续：与长江共生的理念早已根植于武汉人民的日常生活中，即使洪水泛滥，人们仍然时常前往河岸，享受水中嬉游的时光。

1. Life goes on: Living with the Yangtze River is so deeply embedded that people still frequent the riverfront even when it is flooded, enjoying intimate contact with the water.



(落差最大可达7m)，公园的面貌和使用者的景观体验一直处于不断变化之中。在武汉，江水与陆地之间并没有明确的界限或屏障，取而代之的是一种不断演变的边界。常常能看到这样的景象：上学的孩童争相跨过露出水面的高地，嬉游其间；抑或全家出动，在被水淹没的公园中踩水或套着游泳圈戏水，享受美好时光（图1）。无论是在遥远的过去还是现在，与其他许多城市相比，“与江共生”都已成为武汉人民生活的一部分。

然而，这处备受欢迎的滨水空间当前也存在着诸多隐患。正由于与长江共生的生活模式早已根植于武汉的文化中，即使洪涝频发，人们仍会时常前往滨水公园，而这恰恰会让他们面临感染血吸虫病（由寄生性扁形虫引起）等介水性疫源性疾病的危险^[3]。这种血管性疾病对长江中游湿地和湖泊区域的人类和牲畜构成了重大健康威胁^[4]。

随着城市的不断发展，武汉逐渐成为中国的科技、教育和创新中心之一，土地价格也一路飙升。城市发展的压力与公众对开放空间的需求的冲突日益加剧，但可利用的土地资源却在不断减少。在这样的力量拉锯中，出于安全考虑，处于洪泛区的滨水公园未被开发，得以幸存。

另一方面，除了防洪堤以外，公园单调的滩涂景观看起来贫瘠无趣，尽管未能有效吸引沿河投资，但这未尝不是一件好事——如此公园才得以在如火如荼的城镇化浪潮中幸存（图2）。事实上，这些滩涂既能为候鸟提供觅食场所，也能为鱼类提供产卵栖息地，在支持生物多样性方面发挥着关键作用。然而，滩涂也是世界上最脆弱的生态系统之一，由于上游大坝的修建，长江的泥沙流量在过去40年里下降

了至少70%，严重威胁着这个重要的生态系统^{[5][6]}。同时，目前江边的沼泽地也仅以芦苇（*Phragmites australis*）丛为主，而这一区域本应拥有非常丰富的生物多样性。以上这些因素共同影响了滨水地区的公众健康与滨水景观的生态完整性。

武汉现有的滨水空间多数为工业遗迹，且都很不起眼。这种滨水景观只能从摩天大楼上远眺，空间体验较差。在过去，城市主要沿着长江两岸线性扩张，缺乏能够将人们（尤其是那些在长江边上就近工作或务工的人群）引导至江边的街道——工业化的影响延伸至江岸，城市内部和江水之间并无明确联系。可见，滨水区缺少一个宏观的景观框架来凸显长江的重要性，同时创造可供人们来江边休憩的开放空间。尽管长江沿岸的大部分重工业设施都已迁离，但滨水公园内部的68座标志性码头和趸船均被保留了下来。其他遗迹包括废弃的桥梁、城墙和那些建于20世纪早期的陈旧基础设施——当时的火车车厢会被装载到趸船上，顺江转运至下游。除了一些仍被用作“浮动式社区花园”的趸船外（图3），滨水公园的很多区域都已废弃，但其中多样的工业遗迹仍呈现出强烈的视觉冲击力和开发潜力。

当前，中国的规划设计过程往往缺少公众参与。虽然武汉的公园总是挤满了人，看似都已被充分利用，但周边社区的居民乃至武汉其他区域的市民对公园的未来期许却无从知晓。与此同时，中国快速发展的社交媒体平台为倾听武汉市民的心声提供了宝贵机遇。当前，中国网民的数量激增至8.55亿，其中98%的用户可通过移动设备访问互联网^[7]。前所未有的开源众源数据和有效反馈激发了中国规划和设计创新的巨大潜力。



2. 现状：当前的滨水公园以重要基础设施和高筑的堤防为主，单调的铺装、缺乏文化底蕴的规划、有限的生态效益难以为人们带来丰富的游乐体验。
3. 现状：大部分趸船都已废弃，其中少数经由改造成为了“浮动式社区花园”。
2. Existing conditions: Dominated by significant infrastructure and high levees, the existing park is a repetitive experience comprised of monotonous paving, culture-deficient programming, and limited ecological benefits.
3. Existing barges: Largely decommissioned, some are used as floating community gardens.

2 设计策略

2017年，在武汉市国土资源和规划局组织的长江主轴总体规划国际方案招标中，Sasaki凭借对社会、文化、环境和生态的深入理解，以及多学科的合作设计方法而胜出，得以为这一16km长的滨江地带进行城市设计和景观规划。

2.1 与洪水共生

人们通常将“韧性”（resilience）理解为借助人工手段来应对强大的自然力量——与自然抗争，而非拥抱自然。然而，武汉长江主轴滨水公园改造项目却旨在与自然协作，而非对抗。重新构想的公园设计突出了这座城市颇具标志性的江岸工业遗产，通过全新的设计空间保障了人们与自然江水互动的安全性（图4）。考虑到季节性洪水是长江自然水文过程的一部分，公园的规划顺应了江水的季节性涨落。此时





4. 总体规划平面图：扩建的滨水公园跨越了长江两岸，为武汉打造出未来的景观愿景——这里将形成一个连续的公共滨水带。
4. Master plan: Straddling both banks of the Yangtze River, the expanded riverfront park provides a landscape foreground for the city, creating a contiguous public waterfront.

的公园不再仅仅是一条简单的滨江长廊，还结合滨江建筑、街道、堤岸、港口与桥梁及河岸线，提供了多层次的空间体验（图5）。频发的洪水反而成为了公园内场所营造的重要依托，公共艺术和教育展览凸显了长江时刻不停变化的起落（图6）。所有这些设计元素都促使公园使用者去了解并欣赏自然力量，同时感受武汉数个世纪以来与长江共生的遗产景观。

2.2 提高生态系统服务

通过在保证安全的前提下对堤坝进行策略性改造，重新规划后的公园能够消纳更加频发却可控的洪水，以为场地补充营养丰富的沉积物、培育上百公顷的滩涂。适当的疏浚作业能够帮助场地构建不同的微环境，形成多样的湿地生态系统（图7）。从长满挺水植物的沼泽到河岸湿地，再到牛轭湖，微妙地形变化和水位波动孕育着复杂的植被群落。通过精巧的地形设计，公园在中高水位时可形成数条蜿蜒的次级河流，既可为野生水生动物提供迁徙廊道，也能让皮划艇安全通过——即使长江干流咆哮不止，高高的沼泽草丛中也能保有一片静谧之地。在旱季，这些河床又可作为非常规通道供人们在茂密的草丛中穿行、探索。在开阔的沼泽地里，供龟类休憩的原木、供鱼类栖息的水下构筑物及供水禽筑巢的平台等景观要素为那些喜欢开阔生境的物种提供了栖息之所，而树林里隐蔽的观鸟台则为野生动物爱好者提供了学习机会（图8）。

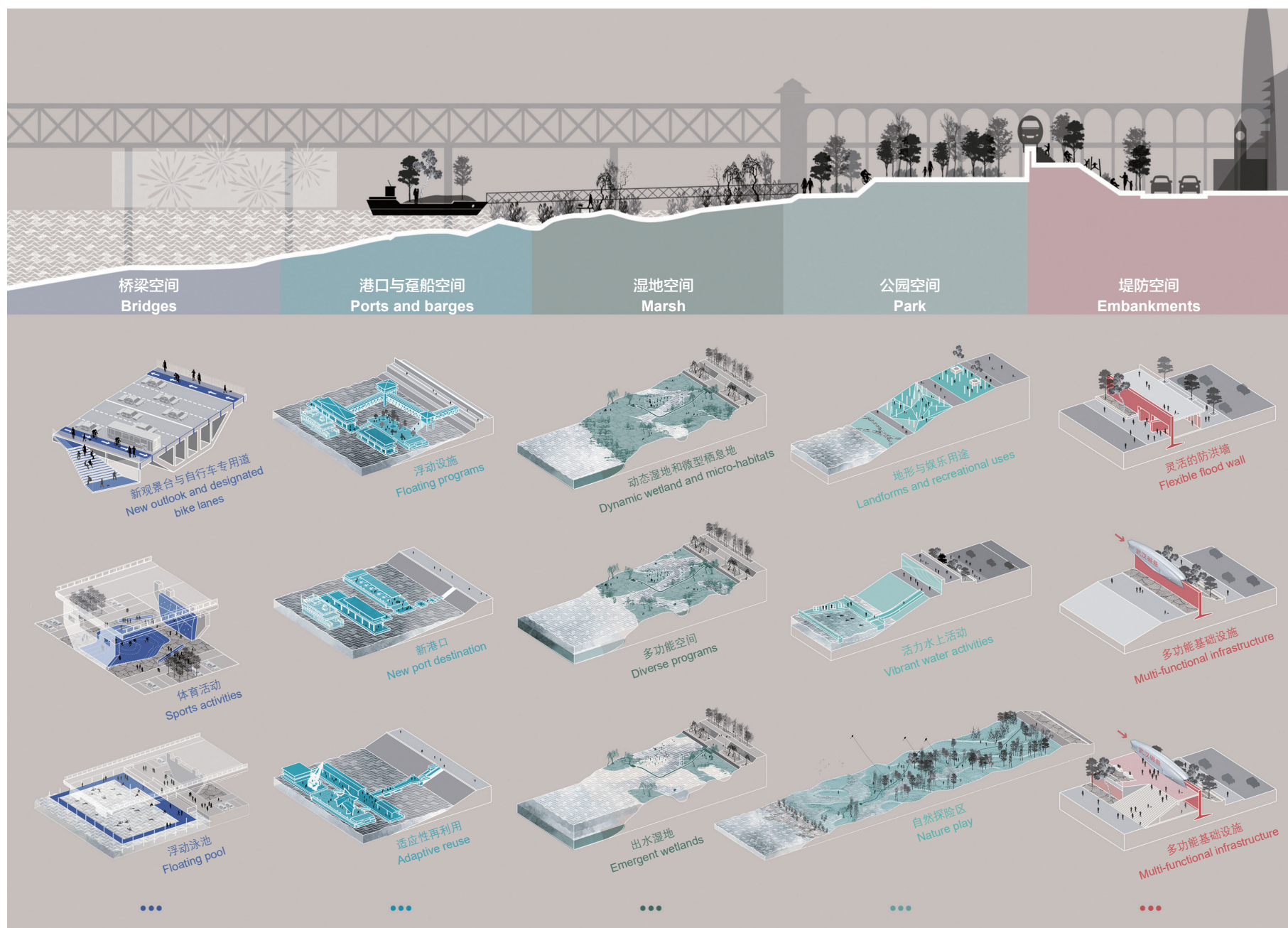
休闲空间的设置为长江流域重要野生动物预留了物种传播/繁衍空间。洪泛时，部分休闲空间会暂时隐入江中，成为动物的乐园，人

们则可远观这一盛景。这种统筹考虑的方法不仅可以使生态系统暂时远离人为影响、吸引捕食者并改善栖息地状况，还可以通过减少与血吸虫接触的风险来保障公众健康。

在生物多样性和经济效益方面，大胆的生态干预策略也为滨水区增加了可观的价值。层级鲜明且更具生物多样性的景观设计改变了滨水区的价值形态，原本因生态价值被忽视而一度被误解为水域视觉障碍的广阔滩涂，转变为能够寓教于乐的场所。基于对当前大面积同质景观的反思，设计团队提出了多样化的种植策略以增加物种丰富性。一系列的次级通道和起伏的地形创造了不同的微气候，促进了具有鲜明季节特色的多样化动态生态系统的自然演变（图9）。场地中的整个景观都将被激活，创造出色彩斑斓、物种多样的滨水公园。

2.3 基础设施的适应性再利用

当前滨水区最具标志性的元素多是一些象征着武汉20世纪工业成就的空间元素。桥跨、栈桥点缀着江岸，68艘漂浮的趸船散布于公园景观中（图10）。尽管武汉市最初考虑移除这些设施，但在本次总体规划中，Sasaki团队期望改变它们的用途，重新创造出社区花园、表演空间和随江水起落的浮动长廊等项目设施（图11）。另一些元素则被改造成公共艺术品，以唤起人们对长江工业遗产的记忆。艺术品上通常附有说明标识，可让公园游客了解长江在塑造当代武汉形象上的重要作用（图12，13）。重新启用的舷门和狭窄甬道与供户外艺术展览和表演的浮动平台相互连接（图14-1）。抬高的座位区保证了演出可在高水位时进行，同时可提升公众对动态河流的体验（图14-2）。



现有的滨水公园还是以大面积的单调过时的人行道和植被为主，整体显得千篇一律。新的规划不仅将园内的人行道与自行车道和区域网络中超过75km长的连续步道连接起来，而且还设计了新的线路，以充分串联精心设计的视线景观（图15）。其中一项最重要的目标是兴建一条与防洪堤顶部相连的轻轨线，鼓励公共交通出行，进而缓解滨水地区日益增加的交通压力。这一公共基础设施未来将造福武汉市民和游客。

虽然公园的首要目标是构建一个主要由公共投资支撑的大型城市景观，但总体规划也对公园的创收进行了构想，例如，将位于公园主要入口和景点处的一些基础设施改造为咖啡馆和小型零售店（图16），

或将公园内的大型空间用于举办音乐会和节庆活动等，借助设施的租赁收入和活动的门票收入来支持公园的长期规划与维护。

2.4 公众参与和外展服务

为了改变设计过程中公众参与有限的现状，设计团队利用社交媒体来进行最大限度的外展服务。在开展更多传统公众参与活动的基础上，项目采用了众源数据和信息收集模式，所获结果大大超出了团队预期。在整个公众参与过程中，设计团队收集到了来自武汉各地超过65 000条的反馈意见，这些规划意见直接影响了设计的迭代。相关活动



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5. 多样的滨水条件：场地复杂的现状条件被有序融合到5个关键功能分区中，而综合的设计工具则为不同条件下的挑战提供了灵活的解决方案。
6. 与洪水共生的灵活空间：一系列驳船串连成了一条植被繁茂的水上长廊，可随江水波动上下起伏。江岸与长廊间形成了一个可被淹没的广场，每逢洪水季节，广场地形起伏的金属网格栅会被淹没，转变为漂浮小岛，供野生生物休憩。

5. A diversity of waterfront conditions: A variety of complex existing site conditions were organized into 5 key spatial components, with a comprehensive toolkit providing flexible solutions to each respective challenge.
6. A flexible, floodable public space: A series of barges form a lushly planted floating promenade that rises and falls with the river and delineates a floodable plaza between

the riverbank and the promenade. Submerged during high water events, the undulating metal mesh grid of the plaza transforms into small islands for wildlife to rest.

包括公开会议、当地民间团体组织的现场考察、从市民手中收集滨水地区历史照片的生活遗产项目、青年规划项目，以及一系列邀请居民表达其对公园期许的社区艺术活动（图17）。与此同时，专门设计的项目网站能够让公众了解公园的设计进展，同时征集市民、学者和设计同行等各利益相关群体的意见反馈。这些意见向所有人公开分享，如果意见对设计迭代有所助益，将会告知提出者。

这种市民驱动式参与发挥了重要作用，如果没有市民的参与，设计策略将很难制定。只有当市民对如何塑造城市拥有发言权时，设计才能更好地回应实际终端用户的梦想和愿望。这里的人们成长于江边，享受居住于此的快乐，自然对本地文化有着独到而深刻的理解，聆听他们的意见是建立滨水公园新身份的重要环节。更重要的是，听到这么多关于滨水公园未来的激动心声，了解到他们对于子孙后代的景观体验的期望，不仅鼓舞人心，也影响着对这个重要公共空间的设计构思。通过持续的公共参与，项目赢得了强大的共识基础，重建后的武汉长江主轴滨水公园将力争打造一个具有社会包容性、文化特性和生态价值的滨水空间，并秉持与活力长江和谐相处的理念。

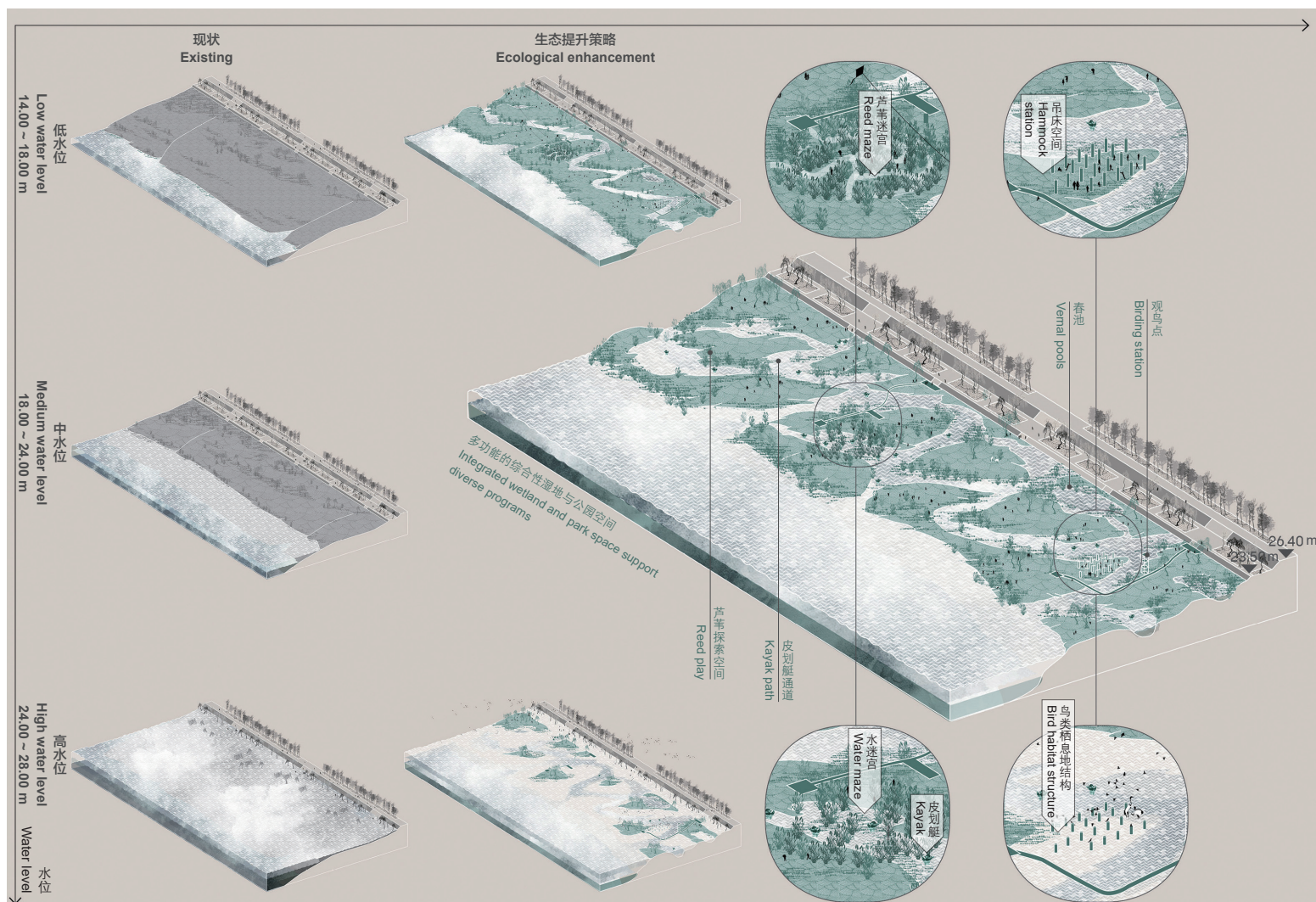
3 讨论与评价

从根本上看，武汉长江主轴滨水公园改造项目探讨了一系列经常相互冲突的元素——如城市的有序和长江的无序，以及协调这些元素的方法。公园将以往的工业基础设施视为一个整体，使垂直方向上的武汉天际线与水平方向上的宽阔江面实现了调和。最终，人类既要利用实现了高度城镇化的长江滨水区建成环境，也要维持沼泽、滩涂和林地的自然状态，使二者相互交织，创造出更为诗意的体验。如何让所有这些冲突力量达到平衡状态是项目成功的关键，也是为武汉创造美丽、实用且富有韧性遗产的重要途径。

虽然项目的设计灵感来自于武汉的独特文化和令人钦佩的开放态度（用以反思与不可驯服的长江之间的关系），但这些方法和设计原则同样适用于其他地方，因为基于自然的规划和设计已然觉醒并风靡全球^{[8][9]}。不能因为滨水区每年约有1%的时间会被洪水淹没就采取保守的设计方法，以至于牺牲掉其余99%可为城市和市民造福的潜力。人类已经成功地与环境共同进化了成千上万年。我们比其他任何物种都清楚，当灾难来临，大自然是不可控的。早在人类出现在这个星球之前，协同进化就已占据上风，而且将比我们的任何技术和文明成就都更持久。LAF

项目信息

项目地址：中国湖北省武汉市
项目面积：503hm²
项目委托：武汉市国土资源和规划局
景观设计：Sasaki
首席设计师：迈克尔·格罗福、张韬
设计团队：薛铭仁、崔沐晗、Ponnapa Prakkamakul、杨兰慕之、杜翀然、赵欣、石玥、冯鸽
设计时间：2017年
所获奖项：2020年美国景观设计师协会波士顿分会分析与规划类荣誉奖



7. 对脆弱生态系统的威胁：在过去40年中，由于上游大坝的建设，长江的沉积物减少了90%，因此有必要修复那些对长江生态有益的滩涂。
8. 增强河流生态功能：利用频发的洪水、战略性疏浚策略和精确的地形分级，帮助公园补充营养丰富的沉积物，以重建独特的栖息地，并增加滩涂生态系统的生物多样性。
7. Threats to a vulnerable ecosystem: Over the past 40 years, sediment in the Yangtze River has dropped by as much as 90% due to upstream dams, necessitating a restoration strategy for the river's ecologically beneficial mudflats.
8. Enhancing riverine ecology: Frequent flooding, strategic dredging, and precise grading replenish nutrient-rich sediment to reestablish distinct habitat zones and increase biodiversity in the mudflat ecosystem.

1 Background and Problems

The Yangtze River drains one-fifth of China's land area and is revered as the mother river that has nurtured Chinese history, culture, and economy since the dawn of civilization^[1]. For millennia, settlements and cities along the Yangtze River have been consistently reminded of the river's power by witnessing the force of frequent destructive floods. In recent decades, unprecedented engineering advancements like upstream dams and higher levees have reduced the risk of devastating flood events, elevating a sense of security along the waterfront. Climate change, however, continues to challenge this narrative in volatile ways, and with increasingly devastating consequences. Ongoing flooding suggests that the river is not tamable^[2], and new tactics—ones that work with nature rather than against it—are required.

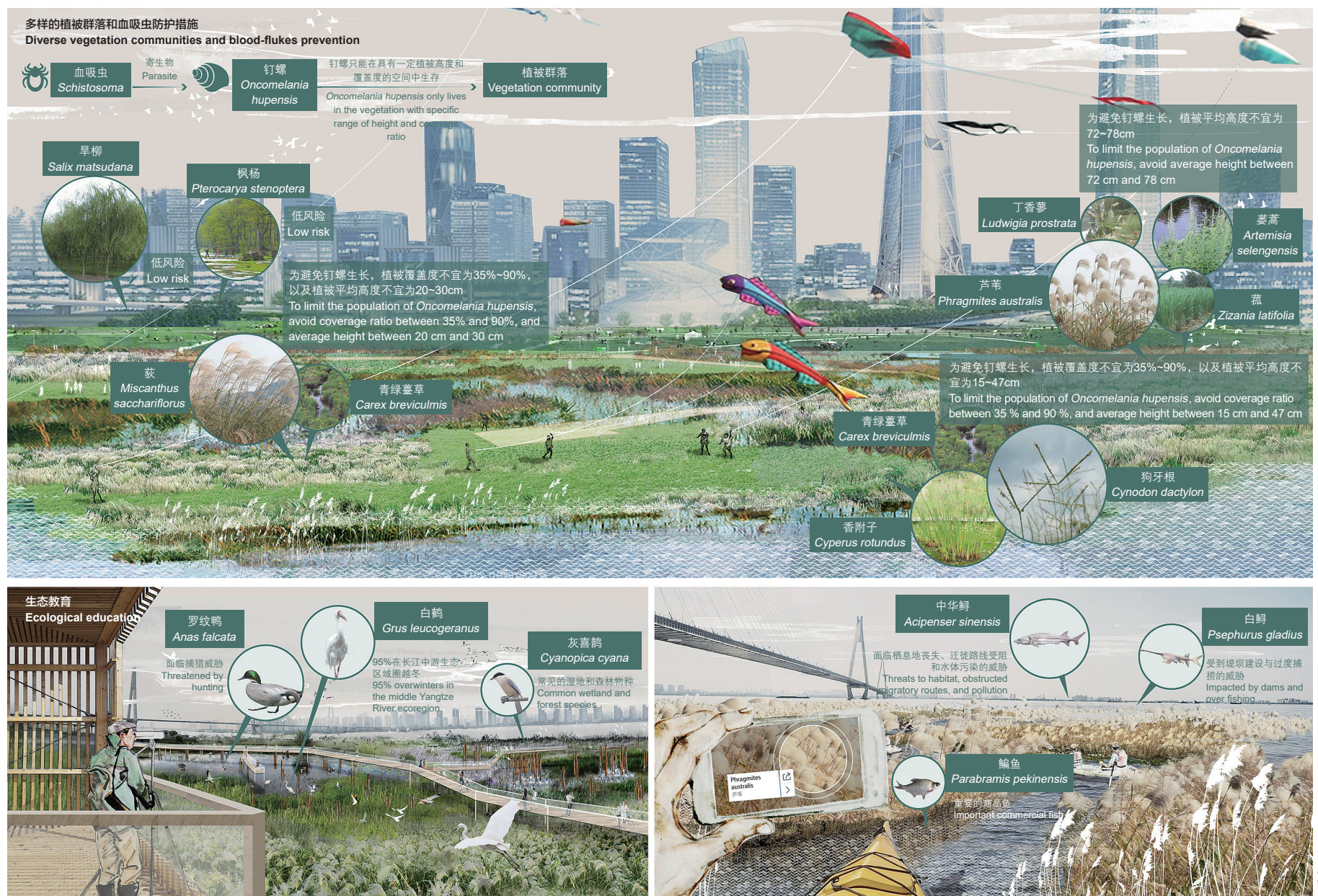
Wuhan's urban vernacular has been intertwined with the Yangtze River for over 1,800 years. With the ancient settlements of Wuchang and Hanyang—Wuhan's predecessors—established on higher ground, the river nurtured their people and provided natural protection against invaders. Dependent on the river for drinking water, trade, and farming in its fertile sediment, the city enjoyed prosperity and industry brought by the Yangtze River. With those benefits also came disasters such as damaging floods. Over time, Wuhan and the river forged a symbiotic relationship until industrialization, rapid urbanization, and higher levees fractured this bond. Over a century of industrial exploitation and urban expansion continued to degrade the waterfront, limiting public access, destroying natural habitat, and increasing pollution.

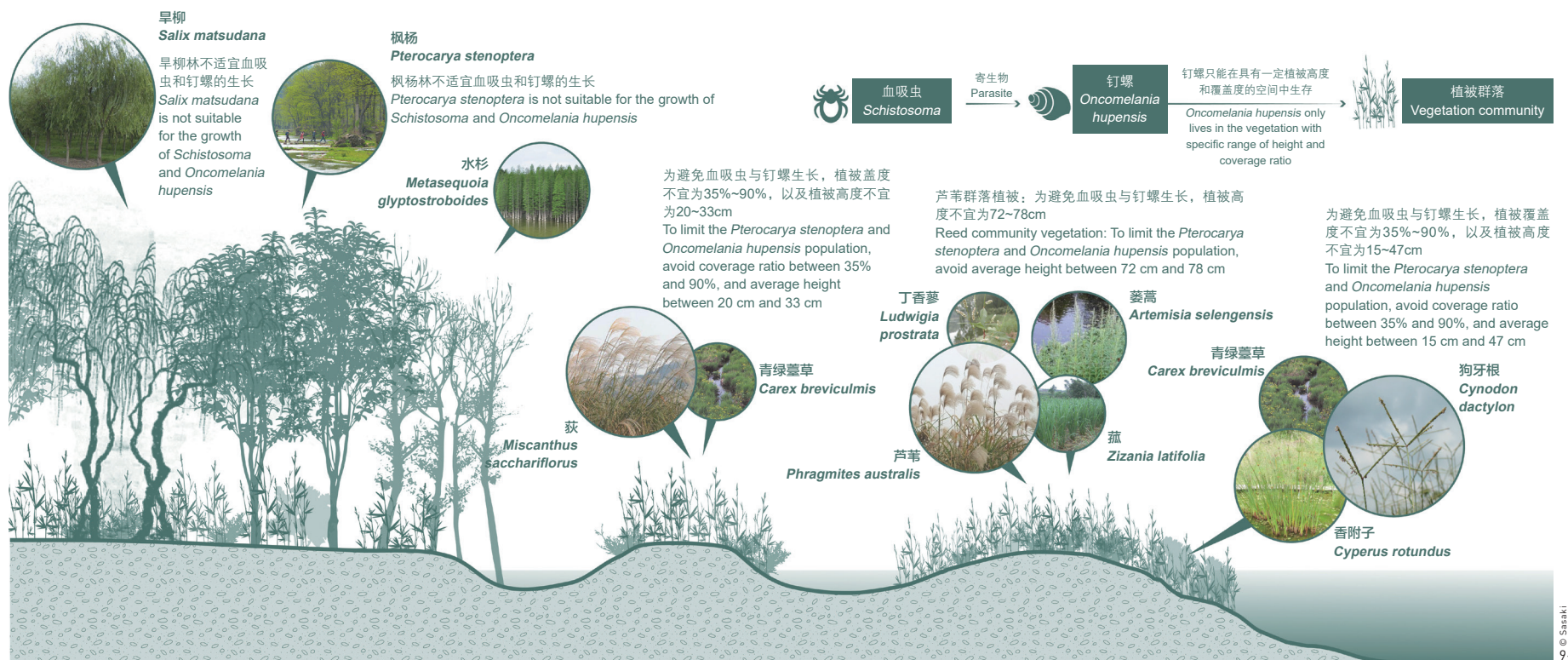
In recent years, a traditional waterfront park along the levee replaced obsolete industrial uses as the city continues its

movement to reconcile with the river. Armored with three tiers of levees, Wuhan has allowed the dynamic floodplain to evolve into a public space. Each day in this park is different, as its physical dimension and the human experience of the landscape are constantly dictated by the fluctuating water levels, which can vary up to 7 meters. Rather than a clear delineation or barrier between where the water meets the land, in Wuhan, it is an evolving edge. It is not uncommon to see school children making a game of scrambling across points peeking out from the water, or families enjoying the day by wading or tubing through inundated riverfront park (Fig. 1). More than many other cities,

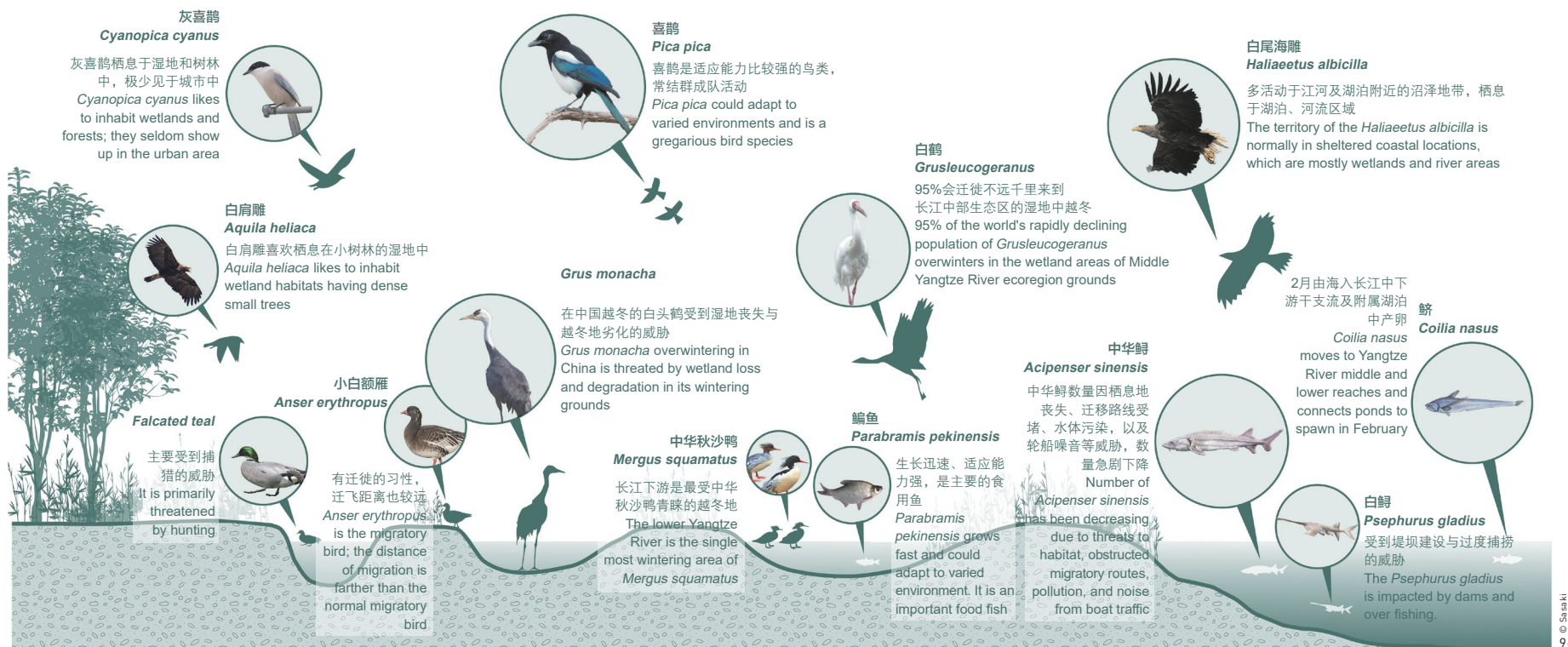
Wuhan's ethos of living with the river is a unique part of its story, both in ancient history and in the modern era.

Continued public use of this beloved waterfront space, however, can sometimes prove perilous. Interaction with the river is so deeply embedded in the culture of Wuhan that people still frequent the riverfront park even when it is flooded, putting themselves at considerable risk of contracting Schistosomiasis, a waterborne disease commonly transmitted by parasitic flatworms^[3]. The intravascular disease poses a major health risk to humans and livestock in the marsh and lake areas along the mid-range of the Yangtze River^[4].





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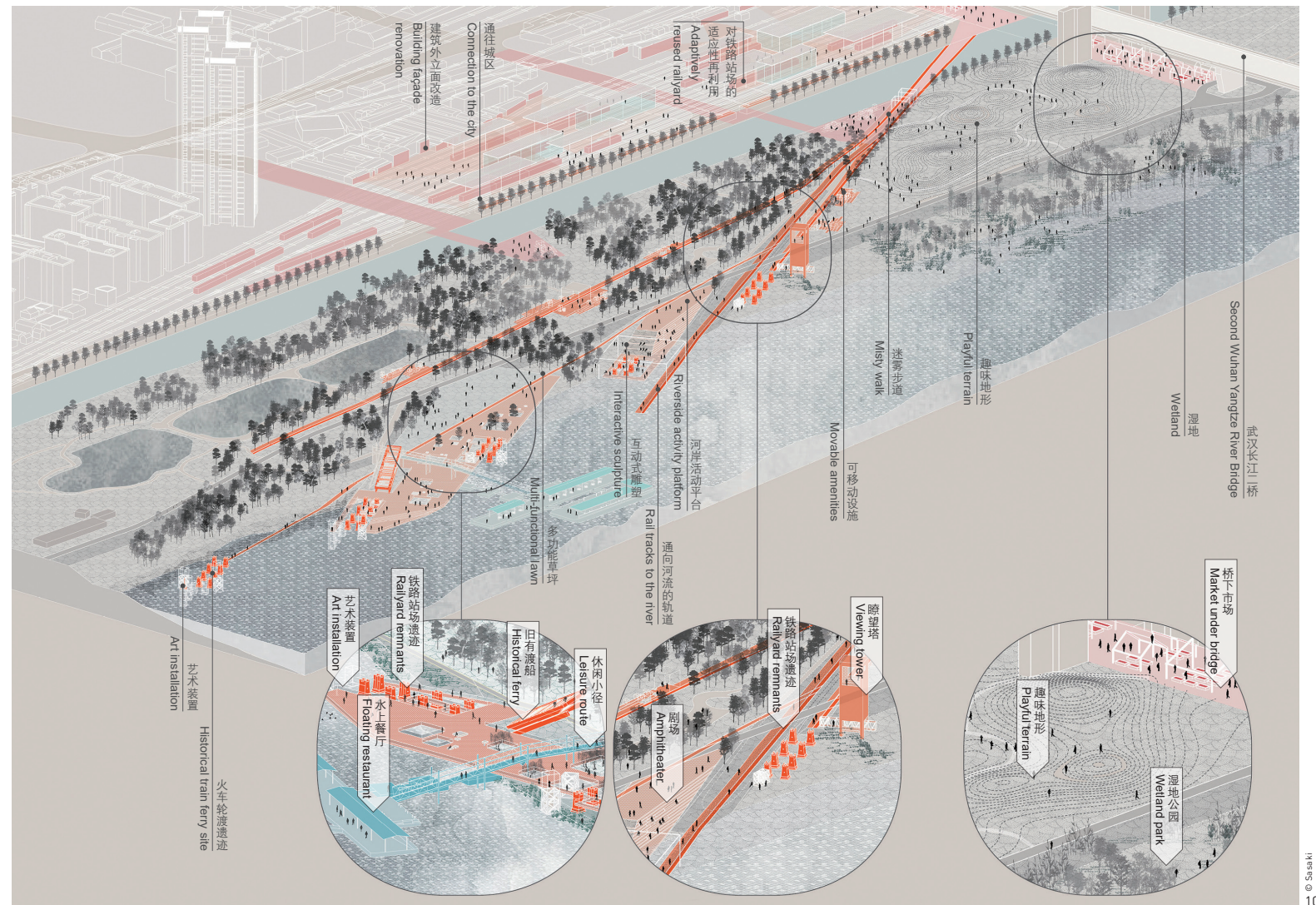
9. 丰富的湿地群落：细微的地形变化、根据淹没深度而制定多样化的种植方案，以及筑巢平台和漂浮原木等栖息地要素，都有助于提升湿地健康。
 10. 辉煌的工业历史：现存武汉火车轮渡码头墩柱遗迹，火车车厢可从这里转移到趸船上，以继续在长江上航行（图10-1）；改造后的工业基础设施将拥有更大的开发潜能（图10-2）。
9. Complex wetland communities: Nuanced topographic changes, a diverse planting palette based on inundation depths, and habitat elements including nesting places and loafing logs all contribute to the wetland's health.
 10. Honoring an industrial past: Pedestal remnants of Wuhan's freight train terminals, where train cars were transferred to barges to continue their journey on the Yangtze River (Fig. 10-1); Repurposed industrial infrastructure for a host of programmatic opportunities (Fig. 10-2).

As Wuhan continues to emerge as one of China's hubs for technology, education, and innovation, land prices are soaring as the city expands. Conflicts between development pressure and public demand for open space are increasing, while available land resources continue to be depleted. Despite these forces, the existing riverfront park has survived, as common wisdom in Wuhan dictates that the floodplain is no safe haven for settlements.

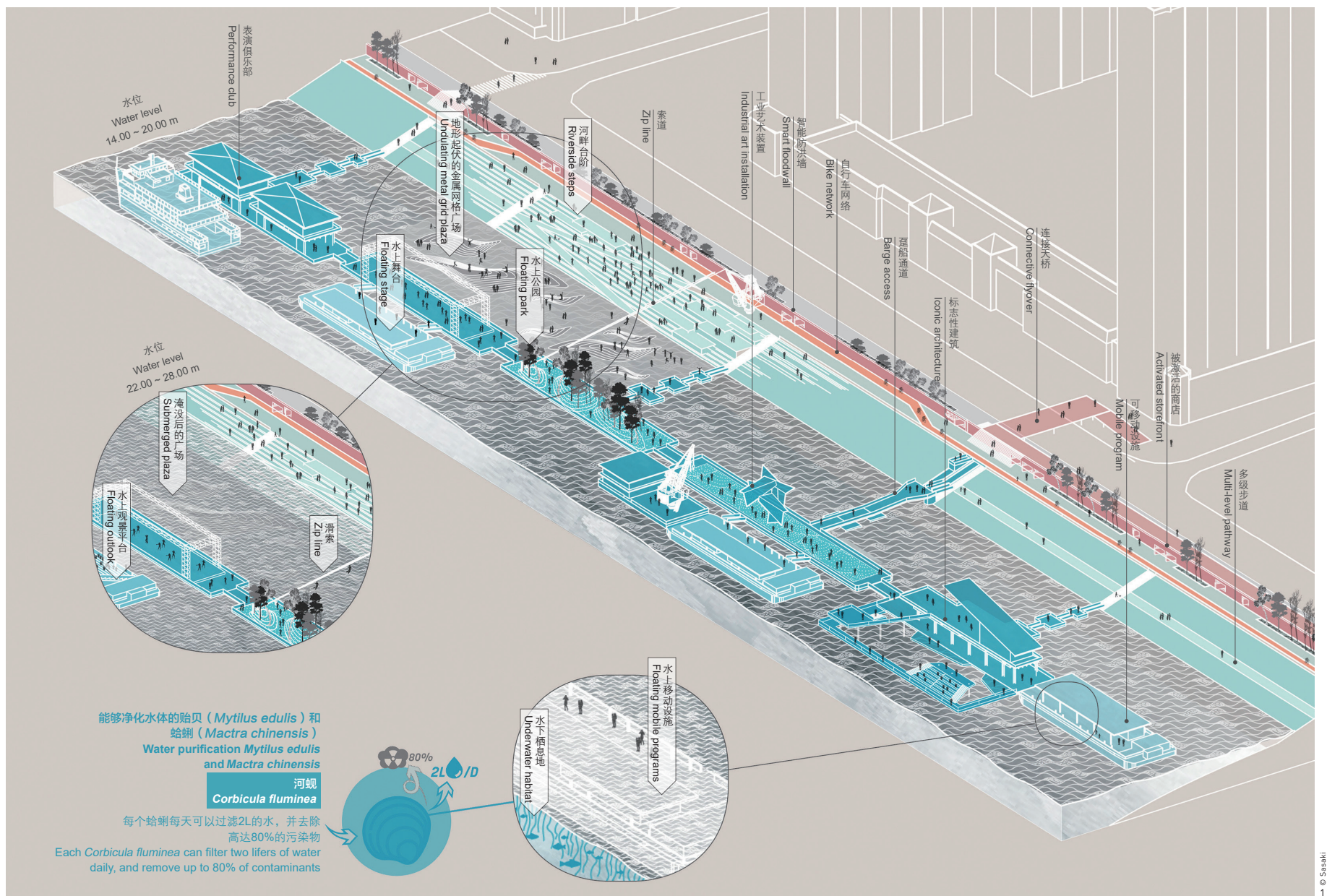
Beyond the levee, the park's monotonous landscape of mudflats has limited investment along the river because they are perceived as barren and unattractive—a blessing in disguise that has allowed the park to survive in the recent aggressive urbanization (Fig. 2). These mudflats actually play a critical role in supporting biodiversity, providing foraging grounds for migratory birds and spawning habitats for fish. Yet mudflats are among the world's most vulnerable ecosystems, and the sediment



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flux of the Yangtze River has dropped more than 70% over the last 40 years since upstream dams were built, putting this important ecosystem at risk^{[5][6]}. The riverfront marshes are also dominated by a homogeneous field of *Phragmites australis* and lack the biodiversity that a rich system like this should allow to thrive. These interrelated factors contribute to a composite challenge to the public health and the ecological integrity of the riverfront landscape.

The existing Wuhan riverfront experience is industrial in quality and often neglected. It is something to be viewed from high atop a skyscraper rather than experienced from the ground.

- 重新思考废弃的基础设施: 在公园内部, 原本计划要拆除的68座废弃趸船经过适应性再利用, 转变为水上花园、表演舞台、咖啡馆和美术馆等。
- 废弃基础设施的新生: 曾经未被充分利用的空间为新的景观类型创造了机会, 同时, 那些偶然拾得的天然艺术品和其他工业遗迹则被用作铺装图案和遮阳结构。
- 将工业遗迹作为公共艺术: 当水位较低时, 公园可以展露废弃的铁路

和货运列车等工业遗迹, 唤起人们对码头的记忆 (图13-1); 水位上升则会触发互动式照明装置的开关, 借此强调淹没的工业遗迹, 进而突显河流的力量 (图13-2)。

- Rethinking obsolete infrastructure: 68 abandoned infrastructural elements throughout the park that were initially slated for removal are adaptively

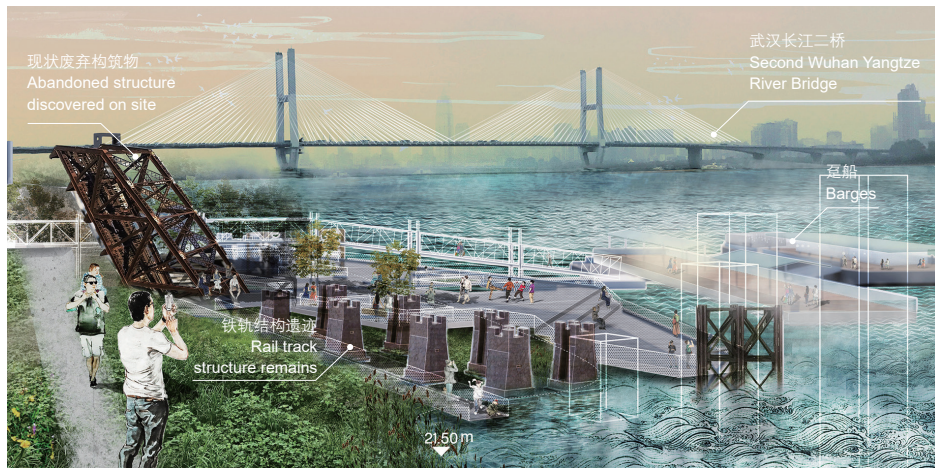
reused as floating gardens, performance stages, cafés, and art galleries, etc.

- New life for existing infrastructure: Once underutilized spaces along provide opportunities for new landscape typologies, while found objects and other industrial relics are reused in paving patterns and shade structures.
- Repurposing industrial remnants as public

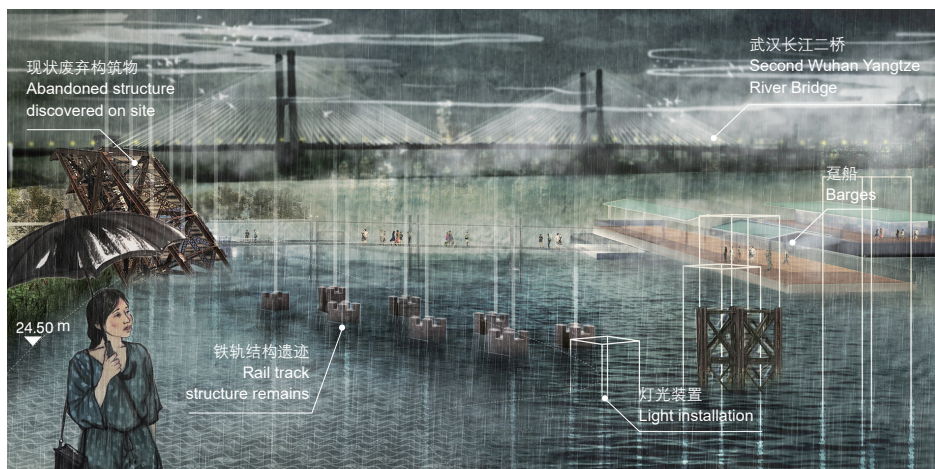
art: When water level goes down, the park reveals its industrial heritages including abandoned railyards and freight train terminals that recall the riverfront's previous uses (Fig.13-1); Rising water levels trigger an interactive light installation that accents the inundated industrial remnants and highlights the river's power (Fig.13-2).



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Historically, due to the city's linear expansion along the river banks, there were fewer streets that led people—likely workers and laborers—toward the waterfront. Because the river was industrialized, there was not a defined connection between the interior of the city and the river. The waterfront lacked a grand landscape gesture to create a sense of importance for the river, provide open space, and bring people down to the waterfront. Although most heavy industrial uses along the Yangtze River have been relocated, 68 iconic piers and barges within the park remain. Additional relics include abandoned bridge spans, ramparts, and other outdated infrastructure from the early 20th century, when railway boxcars were loaded onto barges for their onward journey downstream on the Yangtze River. Though largely abandoned—with the exception of some barges that are being used as guerrilla community gardens—the park's diversity of industrial remnants continues to have a strong visual presence and potential (Fig. 3).

Public participation is largely absent in planning and design in China. In Wuhan, although the park is often crowded and seems well-used by the community, it is unclear what these users, as well as the broader population of Wuhan, envision for the future of the park. Rapidly evolving social media platforms in China demonstrate the potential for broader outreach to engage residents of Wuhan into the process. As China's internet population surges to 855 million with 98% access from mobile devices^[7], the unprecedented availability of crowdsourced data and meaningful feedback holds tremendous potential for innovation in planning and design.

2 Design Strategies

In 2017, Wuhan Natural Resources and Planning Bureau organized an international bidding for the masterplan of the Yangtze Riverfront in Wuhan. Sasaki team demonstrated a deep understanding of the social, cultural and environmental context of the project. Recognized for its interdisciplinary approach, Sasaki team was commissioned to create an urban design and landscape vision for the 16-kilometer-long riverfront park.

2.1 Embracing Floods

Resilience is often mistaken as the need to respond to powerful forces of Nature with an engineered approach—pushing back, rather than embracing. The strategy for the Wuhan Yangtze Riverfront Park, however, was to work with Nature, not against it. The reimagined park celebrates the city's iconic river industrial heritage, redesigning spaces for people to safely engage with the spontaneity of the river (Fig. 4).

Recognizing that seasonal flooding is part of the Yangtze River's natural process, park programming is intimately tied to the seasonal rise and fall of the waters. More than a simple promenade, the park offers multi-layered experiences that integrate with the adjacent architecture, streets, embankments, ports and bridges, and the shoreline (Fig. 5). Frequent floods become a vital driver of place-making strategies within the park, with public art and educational exhibits highlighting the river's ever-changing ebb and flow. These programmatic elements allow visitors to understand and appreciate the power of Nature, and Wuhan's centuries-long heritage coexisting with the Yangtze River (Fig. 6).

2.2 Enhancing Ecosystem Services

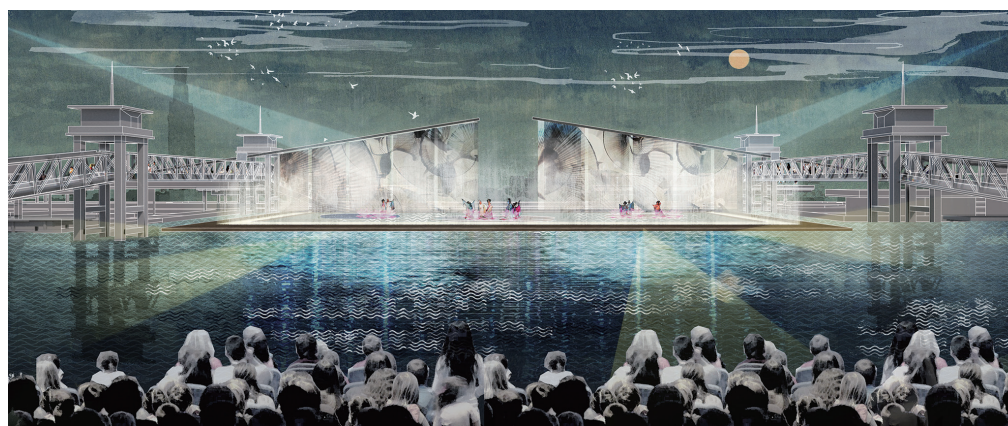
By strategically modifying levees where it is safe to do so, the plan allows for more frequent and controlled floods to replenish nutrient-rich sediment and nurture hundreds of acres of mudflats. Strategic dredging reestablishes heterogeneous patterns of micro-environments that host a variety of distinct wetland ecosystems (Fig. 7). Nuanced topography and fluctuating water levels support complex plant communities, ranging from emergent marshes, to potholes, and oxbow lakes. Sinuous secondary streams are graded to emerge during mid-high water levels and provide passages for aquatic wildlife and safe corridors for kayaking, allowing for a tranquil experience amidst tall marsh grasses even when the Yangtze River roars. In dry months, these streambeds function as informal pathways slicing through dense grasses and providing a sense of discovery. Along with turtle loafing logs and submerged fish structures, waterfowl nest platforms installed in the open marsh support species that favor open habitat, while discreet birding stations in tree groves offer educational opportunities for wildlife enthusiasts (Fig. 8).

Recreational spaces are arranged to allow for sufficient dispersing distances for the key wildlife species in the Yangtze River basin. In flood conditions, recreational fields are temporarily returned to the river and are happily taken over by creatures that prefer to be witnessed from afar. This systematic approach not only allows for ecosystems to recover from the impacts of human foot traffic, attract predators, and improve habitat, but also ensure public health by reducing the risk of contact with of *Schistosoma*.

The bold ecological intervention also adds incredible value to the waterfront in terms of both biodiversity and economics. Where the expansive mudflats were once considered a visual barrier to the water because of its unseen or misunderstood ecological value, the layered and much more biodiverse



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14-2

14. 从工业过渡到文化表达：原有的装货平台和浮动平台等基础设施提供了前往水上舞台的步行通道，人们可在此欣赏户外艺术展览和表演（图14-1）；公共座位区被设置于高水位以上的区域，即使在洪水期，仍然可以进行户外表演，从而增进公众对河流动态的了解（图14-2）。
 15. 扩展后的慢行网络：规划方案将园内步道和自行车道与区域中超过75km的连续慢行网络连接起来。
14. Transitioning industry to cultural expression: Former port infrastructure including loading ramps and floating platforms provide access to floating stages for outdoor art exhibits and performances (Fig. 14-1); Public seating areas are elevated above the high water level to allow for outdoor performances even in flood conditions, promoting public understanding and appreciation of river dynamics (Fig. 14-2).
 15. Extensive trail network: The updated plan connects pedestrian and bicycle pathways to over 75 kilometers of uninterrupted trails in the regional network.

landscape shifts the narrative about the value of the riverfront and creates a foreground that is enjoyable and educational. The diverse planting strategy adds richness by rethinking what is mostly a homogenous landscape. A series of secondary channels and undulating terrain allow for a mosaic of microclimates that will naturally evolve into diverse and dynamic ecosystems with strong seasonality (Fig. 9). The entire landscape will come alive and evolve into different colors and compositions throughout the year.

2.3 Adaptive Reuse of Infrastructure

Some of the most iconic elements of the existing riverfront are the artifacts that symbolize Wuhan's 20th-century industrial progress. Bridge spans, piers punctuating the shoreline, and 68 floating barges are interspersed within the park's landscape (Fig. 10). Despite the city's initial strategy to remove them, the master plan repurposes them for a host of programmatic opportunities including community gardens, performance spaces, and a floating promenade which rises and falls with the river (Fig. 11). Others are repurposed as public art to recall the river's industrial legacy, often with interpretive signage to enlighten visitors of the Yangtze River's significance in shaping contemporary Wuhan (Fig. 12, 13). Recommissioned gangways and catwalks provide access to floating stages for outdoor art exhibits and performances (Fig. 14-1). Seating areas are elevated to allow for performances even amidst flood conditions, promoting public appreciation of river dynamics (Fig. 14-2).

The existing park is also dominated by long stretches of

monotonous and outdated pavement and planting that provide a repetitive experience throughout the park. The updated plan connects pedestrian and bicycle pathways to over 75 kilometers of uninterrupted trails in the regional network, and introduces additional routes within the park to take advantage of carefully considered vistas (Fig. 15). One of the most significant aspirations is a new light rail line integrated on the top of the levee to help facilitate the increasing traffic pressure to the waterfront and encourage public transportation. This public infrastructure will benefit Wuhan's citizens and visitors for generations to come.

Although the primary purpose of the park is to provide a grand civic landscape which will be primarily funded through public investment, the master plan also integrates revenue-generating opportunities within the park. Some of the infrastructures are repurposed as cafés and small retail outlets (Fig. 16). Located at key entries to and destinations within the park, these facilities can sustain the park's long-term maintenance costs with the income from their leases. Similarly, larger spaces within the park can be cordoned off for events like concerts and festivals, with revenue from ticket sales supporting the park's programming and upkeep.

2.4 Public Engagement and Outreach

To challenge this status quo of limited public engagement in the design process, the design team leveraged social media to maximize outreach. Coupled with more traditional engagement efforts, this availability of crowdsourced data and input





16. 适应性再利用：废弃的基础设施将被改造为咖啡馆，包括现有轨道在内的其他元素则会被用于铺装设计中。

17. 广泛的公众外展服务：公开会议、现场考察、青年活动和社区艺术项目等吸引了成千上万名市民的参与，为公园设计提供了意见参考。

16. Adaptive reuse: Decommissioned infrastructures are repurposed as cafés, and other elements including existing tracks expressed in the paving pattern.

17. Extensive public outreach and input: Open meetings, site tours, youth activities, and a community arts program informed the park's design with input from tens of thousands of citizens.

surpassed all expectations. The park's comprehensive public process resulted in over 65,000 pieces of feedback from citizens throughout Wuhan which provided programming ideas and influenced design iterations. Open meetings, site tours organized by local civic groups, a living legacy project which collected citizen-provided photographs of the riverfront's history, youth programming, and a series of community art events invited residents to convey their vision for the park (Fig. 17). Concurrently, a bespoke project website kept the public informed on the park's design progress and solicited feedback from various stakeholder groups including citizens, scholars, and design peers. Comments were shared publicly, and the ones influencing the design iterations informed.

This citizen-driven input provided a vital layer in the process that would have been difficult to ascertain without their involvement. When citizens have a voice in how their cities are shaped, design can better respond to the dreams and desires of the actual end-users. Listening to people that grew up alongside the riverfront, enjoy it every day, and have a deep understanding of local culture was such an important element in establishing the riverfront's new identity. Moreover, hearing so many voices excited about the future of the riverfront and learning how they want their grandchildren to experience it was not only inspiring, but also influential to shaping the design approach for this important public space. Built upon a strong consensus from sustained public outreach efforts, the reimagined Yangtze Riverfront Park strives to create a socially inclusive, culturally relevant, and ecologically meaningful waterfront that embraces the philosophy of living in harmony with the dynamic river.

3 Discussion and Review

Ultimately, this project is about a series of dichotomies between elements that would normally clash—like the order of the city and the chaos of the river—and how to harmonize them. The park reconciles the verticality of Wuhan's skyline with the vast horizontality of the river, using the former industrial infrastructure as the unifying element. Finally, the dichotomy between human use of the river along a very urbanized waterfront, and its natural state of marshes, mudflats, and woodlands required interweaving the built and natural environments into a more poetic experience. How all of these contradictory forces are ultimately balanced will attest to the success of the project and its aspiration to create a beautiful, functional, and resilient legacy for Wuhan.

Although the design was inspired by Wuhan's unique culture and admirable openness to rethinking its relationship with an untamable river, the approaches and design principles are applicable elsewhere, as the awakening of nature-based planning and design prevails around the world^{[8][9]}. A conservative, engineered approach dictated by conditions that occur approximately 1% of the year when the waterfront is flooded should not be undertaken at the cost of forgoing 99% of the riverfront's potential to benefit the city and its citizens. Human beings succeed in having co-evolved with the environment for tens of thousands of years. We know better than any other species that we cannot control Nature when problems arise. Co-evolution prevailed long before humans populated the planet, and will outlive any of the technological and civic achievements. **LAF**

PROJECT INFORMATION

LOCATION: Wuhan City, Hubei Province, China

AREA (SIZE): 503 hm²

CLIENT: Wuhan Land Resources and Planning Bureau

LANDSCAPE ARCHITECTURE: Sasaki

CHIEF DESIGNER: Michael Grove, Tao Zhang

PROJECT TEAM: Ming-Jen Hsueh, Cui Muhan, Ponnappa Prakkamakul, Yang Lanmuzhi, Du Xiaoran, Zhao Xin, Shi Yue, Feng Ge

DESIGN PERIOD: 2017

AWARD: Boston Society of Landscape Architects, Merit Award — Analysis & Planning, 2020

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65,000 pieces of public feedback gathered through in site investigations, mail and email surveys, and by collecting comments and messages on the website / social media.

我在武汉长大。我的生活与港口文化和所有的历史遗迹息息相关。滨水公园应该展示我们的地方文化。
I grew up in Wuhan. The port culture and all the historical heritages affect my life. The riverfront park should demonstrate our local culture.

我担心轻轨线的设计想法。我认为它会影响滨水景观，带来噪音。它也会让我感到压抑。
I'm concerned about the highway idea. It will impact the riverfront landscape and bring noises. It also gives me a feeling of depression.

我经常带我的小孙子去滨水公园，我希望这个公园能够越来越生态，并且具有教育价值。
I always go to the riverfront park with my little grandson. I hope the park will be more and more ecological, and provide an educational value.

滨水公园要重点考虑图书馆、博物馆、老年人专用设施等公共设施的设计。
Riverfront urban design should take public facilities like libraries, museums, and the ones for the elderly as top priority.

