美国绿道规划：起源与当代案例

J. G. 法伯斯 [著名景观规划理论家，美国麻省大学景观设计与区域规划系荣誉退休教授]

摘要…

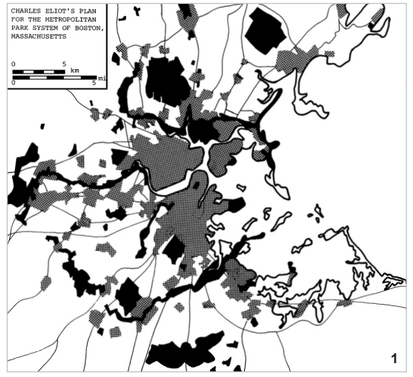
文章详述了美国绿道规划的起源，总结了近20年间绿道规划的相关文献。结论是：虽然绿道运动在美国带动了数以千计的绿道规划和项目，然而图书馆里的理论成果却屈指可数。而且，绿道项目报告的发行量有限，其中又仅有少量成为“学术文献”。另外，绿道报告几乎不涉及相关文献综述或研究方法的描述，因而它们的研究价值和教育价值非常有限。

第二个部分描述了一项由麻省大学景观设计系牵头完成的美国现有绿道规划。该规划的完成有赖于美国政府部门、非政府组织以及上世纪一些富有远见的规划师的共同努力。项目组绘制了资料中所有的绿道和绿色空间，收集了当今政府部门、非政府组织以及个人的提议，最后又附加了一些提议，如果得以实施，可以在全美范围内构建理想的绿色网络。该规划将保护所有对国家有重要意义的或是环境敏感的廊道、区域或绿色空间。同样也为美国民众提供了更多的游憩机会，还将复建所有举足轻重的国家历史和文化绿色廊道。

简而言之，国家远景规划的目的就是要展示一种同时符合景观和绿道规划原则的可行性规划方向，它显示了全面综合规划绿道的重要性。这要求保护自然、适当地发展游憩功能以及留存和复兴有价值的历史文化资源。美国的大部分历史和文化资源都与河流廊道有关，正是这些河流廊道构成了许多绿色廊道的骨架。从场地到城市、区域乃至国家，绿道规划确实在各个尺度和规划层次上演变成一种规划多功能绿色廊道的工具。

关键词…

绿道规划；美利坚合众国



1. **奥姆斯特德的公园系统，**1867**年至今在不断地设计和实施**© Fábos
1. Olmsted ’ s park system, designed and implemented from 1867 to present© Fábos

1 引言

笔者将绿道定义为有生态意义的廊道、休闲绿道以及/或具有历史文化价值的绿道。文章第一部分首先回溯到19世纪下半叶景观设计学创立早期绿道规划的起源，接下来重点突出了20世纪的绿道演化过程。文章第二部分介绍了一个根据以往和现行的绿道规划活动所做的绿道规划案例，即为美国所做的绿道远景规划。规划首先致力于保护和适当利用河流廊道两侧的环境敏感区，其次是废弃的铁路廊道，可以用于连接居民点。

本文旨在以下两点。首先，证明19世纪、20世纪的美国景观设计师的大胆设想影响了区域、州以及国家层面的土地利用。其次，介绍一个最近为美国大陆所作的绿道远景规划。（http://www.umass.edu/greenway）。

2 绿道文献综述

绿道文献资料按时间将分为5个阶段。第一个阶段是1867~1900年，这是先驱弗雷德里克•劳•奥姆斯特德（Frederick Law Olmsted）、查尔斯•艾略特（Charles Eliot）以及霍拉斯•克里弗兰（Horace Cleveland）的时代。第二个阶段是1900~1940年，包括了在20世纪的前30年致力于绿道规划工作的景观规划师们的文献。第三个阶段为第二次世界大战后，20世纪60~70年代的20年间。景观规划师伊恩•麦克哈格（Ian McHarg）、菲尔•刘易斯（Phil Lewis）、祖伯（E.H. Zube）、法伯斯（J.G. Fábos）及其同仁对绿道规划产生的影响。第四阶段是绿道的命名（Little，1990）。第五阶段是对于国外绿道的探索（Fábos and Ahern，1996）。这一系列的演进展示了绿道规划如何逐渐成为一项遍布全球的运动。

2.1 1867~1900年间的早期景观设计师和绿道规划

过去10年的绿道文献一致称弗雷德里克•劳•奥姆斯特德为绿道运动之父（Little，1990，pp. 7~20）。奥姆斯特德最具特色及最早的绿道是波士顿公园系统，通常被誉为“翡翠项链”。牛顿（Newton）称其为公园道（Newton, 1971, p. 300）。奥姆斯特德的公园系统由绿道和绿色空间组成，连接了富兰克林公园，经过阿诺德植物园以及牙买加公园到达波士顿花园和波士顿公园。该系统长约25km，联结了麻省的波士顿、布鲁克林和剑桥，使之通达查尔斯河。

奥姆斯特德的追随者查尔斯•艾略特站在巨人的肩膀上，创造了整个波士顿大都市区方圆600Km^{2}内的公园系统或者绿道网络。查尔斯•艾略特远见卓绝，通过5条短短的沿海河流廊道将波士顿郊区的5个大公园或绿色空间连接起来，例如，通往大西洋和波士顿后湾区的查尔斯河绿道（Fábos等，1968，pp. 57~77; Newton，1971，pp. 318~336）。

用沿海河流连接绿道的方法成为当今规划途径的先驱。艾略特成为第一个吃螃蟹的景观设计师，他首次提出恢复一片城市滨海区——波士顿里维尔海滩，并且为保证大都市公园系统的实施和管理，一手促成了波士顿公园委员会的成立。（Newton，1971）

除了奥姆斯特德和艾略特，在19世纪的美国还有其他一些景观设计师规划了重要的绿道和绿道网络。其中最著名的是霍拉斯•克里弗兰和西奥多•沃斯（Theodore Wirth）一起为明尼阿波利斯大都市区规划的绿道网络，以及乔治•E. 凯斯勒（George E. Kessler）在中西部地区规划的公园及公园系统，凯斯勒最知名的作品位于田纳西州孟菲斯市以及堪萨斯市（Fábos，1991，pp. 6~10; Newton，1971，p. 481）。

2.2 1900年～1945年景观设计师的绿道规划

20世纪早期最受瞩目的景观设计师是奥姆斯特德的两个儿子，以奥姆斯特德兄弟闻名。另外还有亨利•赖特（Henry Wright）和上文提及查尔斯•艾略特的侄子查尔斯•艾略特二世。今日看来，这些人的大多数作品都属于绿道规划。

奥姆斯特德兄弟继承了其父老奥姆斯特德富于想象力、大胆创新的规划和设计实践。1903年，他们应邀前往俄勒冈州波特兰市，为庆祝刘易斯和克拉克的百年纪念设计一处公园。然而，兄弟俩并没有设计公园，而是提出建设一条长64.37km的公园系统，简称为“40英里环线”（Little，1990，pp. 76~80）。根据莱托的说法，奥姆斯特德兄弟开创的工程由后来的绿道设计师们扩展成了225.31km的环线。

亨利•赖特对该职业的影响也很大。尤其1926年他在纽约州的区域规划中做了杰出贡献，叠加图涵盖了从森林恢复到河流廊道规划的多种图层（Krueckeberg，1983，p.200）。因此，在《美国规划师》一书中他被称为区域主义者（Krueckeberg，1983，pp. 208~224）。同时也因为他在新泽西州雷德朋的社区规划项目中，创新性地将内部绿色空间和绿道网络连接起来而闻名。新城规划在1929年至1931年由亨利•赖特和克拉伦斯•斯坦（Clarence Stein）完成，被美国景观设计师协会在百年大会上誉为对专业的独特贡献（Simo，1999，p.111）。艾略特是大都市公园委员会的景观设计师。年轻的艾略特有力的言辞说服了大众，并在很大程度上影响了委员会对规划的修订（Newton，1971，pp. 318~336）。

为了将美国国家公园和旅游胜地等重要游憩景观联结起来，美国国家公园管理局的许多景观设计师也投入到公园道的规划当中。在其众多公园道中，最引人入胜的是蓝嵴公园道。它靠近从华盛顿特区穿过弗吉尼亚州通往加里弗尼亚的阿巴拉契亚山山脊线。这条750km的公园道是美国最美丽、最受欢迎的路线之一（Simo，1999，pp. 88~89）。

这一时期另一重要规划是麻省的第一个开放空间规划，由查尔斯•艾略特二世操刀。1928年，艾略特二世成为麻省开放空间委员会的景观设计师，为州长服务。他与同事设计的最初的开放空间多数维持至今。该州域规划最意义深远的部分即所谓“环湾规划”。长达250km广袤的绿色廊道包围了波士顿大都市区并且联结了区域内主要的湿地和排水系统。该项目直到20世纪50年代、80年代以及90年代才付诸实践（Fábos，1985，pp. 116~117）。艾略特的设想震撼人心并富有逻辑，以至于相关机构3次重新发现其重要性，并且为廊道增加了很多步道，联系州内的社区和生态资源。

2.3 环保20年对景观和绿道规划的影响 —— 20世纪60年代及70年代

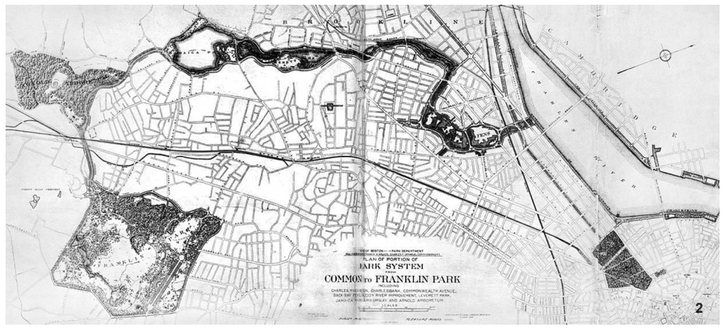
20世纪60年代和70年代，景观设计学专业的学术界盛行环保之风。威斯康星大学、宾夕法尼亚大学以及麻省大学的3个学术小组成为景观规划研究的主要中心，并且都发表了一些代表性的成果。

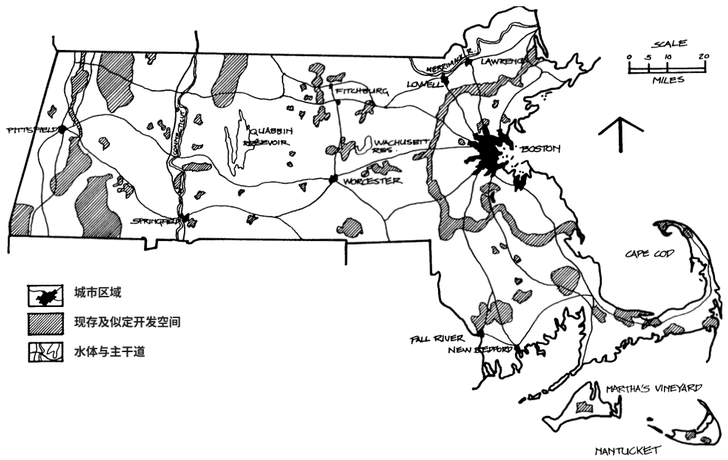
由于菲尔•刘易斯的作品充满远见，威斯康星大学引起举国关注。刘易斯通过他在60年代早期研究的一种制图技术，在威斯康星确认了220处自然和文化资源。当他和团队对资源进行绘制时，发现它们都集中在廊道附近，特别是河流和主要水渠。他将这些地区命名为“环境廊道”。他的绘图、分析以及资源评价是威斯康星遗产廊道计划的基础（Lewis，1964）。他的作品总是将可持续性作为重点（Lewis，1966），其环境廊道的概念首先用来规划全州范围内一个主要的绿道/绿色空间系统，并着重于保护环境敏感地区或河流廊道。恰恰在这些地区，人类活动会对水质和其他环境质量参数造成严重的负面影响。绿道运动直觉地认识到了这一重要关系。大部分湿地和湿地系统也位于河流廊道。几千年来，河流冲刷出山谷沟壑；几个世纪以来，河流与沿海地区充当着自然的高速公路，并且孕育了早期的人类居民点。所以菲尔•刘易斯在威斯康星的研究中列出多达220处的景观资源（Lewis，1964，pp.102~107）也就不足为奇了。其中近一半是自然资源（如瀑布），另外一半为文化资源（如磨坊和桥梁）。

在此期间，宾夕法尼亚大学由传奇人物伊安•麦克哈格掌门，他是60年代美国环境运动的领袖。麦克哈格（1969）撰写的《设计结合自然》，是一部真正的开山之作，该书转译成很多种语言，在全球广泛传播，读者量超过其他任何一位景观设计师的书。麦克哈格所有的规划，包括书中收录的部分，都大量运用绿色空间和绿道系统。他有一些同事（如Spirn，1984，《花岗岩花园》的作者）延续了他的工作，但更注重城市地区，以及为新城和新开发提供框架。

也许伊恩•麦克哈格所述与绿道/绿色空间最为相关的案例，是山谷规划那一章（McHarg，

2. **查尔斯•艾略特的麻省波士顿大都市公园系统**© Fábos
2. Charles Eliot ’ s plan for the Metropolitan Park System of Boston, Massachusetts © Fábos





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3. 查尔斯·艾略特二世1928年为麻省政府所做的开放空间规划。作为开放空间委员会的一员，他主持了该规划，至此以后成为州域开放空间规划的基础© Fábos

3. An open space plan for the Commonwealth of Massachusetts, 1928 by Charles Eliot II. As a member of the Open Space Commission, Eliot drew up the open space plan for the Governor of Massachusetts in 1928. This plan has been the basis of state-wide open space planning ever since. © Fábos

1969，pp.79~93）。为了保护“谷底”免于开发，近一半的地区为绿道——绿色空间网络所覆盖。该规划成果类似于刘易斯的“环境廊道”计划。

麻省大学在欧文•祖伯（Ervin Zube）的领导下，非常积极地参与景观规划项目和研究。笔者经常与祖伯合作（Zube等，1975；Fábos，1979，见第9章）。1970年，笔者牵头开展了一个名为METLAND的新研究，取自大都市区景观之意。该项目的研究目的是确定在增长最快的大都市区各种类型开发的土地利用适宜性，项目因此而得名METLAND，指的是大都市景观。该项目组定量评价的结果常常与麦克哈格团队不谋而合。其主要的区别是，麦克哈格团队主要使用通常所说的“景观法”，而METLAND团队的研究更多是基于“参数法”。景观法是基于“基本景观属性，如地形、土壤以及植被”（Fábos，1974，pp.158~164，和Mabbutt，1968，pp.15~21），而参数法更加量化，“允许使用无数的变量，更有一致性，可以进行比较，还能使用电脑进行评价。”（Fábos，1979，p.165）。

在1970年到2000年的美国，METLAND项目组的研究在景观设计师中也许是持续时间最长的，研究成果丰厚，并且系统地在国际上传播开来，为景观设计师做出土地利用决策提供了工具。

2.4 绿道运动的命名，20世纪80年代和90年代

查理斯•莱托认为是已故的威廉•H.怀特（William H. White）首次使用了绿道这个词。他是一位杰出的环境主义作家，1959年他在城市土地研究所出版的专著《保卫美国城市开放空间》中创造并使用了该词。

20世纪80年代还发生了两起重要事件，极大地推动了绿道运动的传播。其一，总统委员会在《美国户外报告》（1987）中极力提倡“畅想未来：有生命的绿道网络……为人们在居住地附近提供进入开放空间的机会，在美国大地上连接城区和郊区……像巨大的环流系统一样串联起城市与乡村”（总统委员会，1987，p.209）。“绿道”一词见于总统委员会的报告，表明其支持态度。而且，委员会将河流网络描述成一个“有生命的绿道网络”，说明委员会认识到一个事实：河流边缘就是水和陆地相接的部分；绿道确实保护了水质，使其免于工业、城市，以及农业污染。

其二，查理斯•莱托的代表作《美国的绿道》出版（Little，1990）。该书提供了全面的视角，并简要总结了16个绿道项目，是优秀的绿道规划启蒙书。但是它最重要的影响也许是对于绿道规划工作的宣传。

2.5 国际绿道运动的开端以及绿道资料

作者认为绿道规划和实施的发展在美国所有的规划和设计活动中是最快的。自20世纪80年代绿道得名以来，国内外、州内以及区域绿道会议上数以千计的项目报告可以证明这一点。但相关的绿道出版物却寥寥无几。下面对绿道文献的简单回顾总结了美国的绿道文献的现状，对出版物稀缺的状况作出了解释，并分析了可能的原因。

2.5.1现有绿道文献

可得的绿道文献至少可以分为4种：1）书籍和杂志文章，2）博士学位论文，3）项目报告，4）世界各地的网络信息。

一般认为，对作者来说，书籍和期刊文章是最理想的出版形式，其评审也比其他出版物更为严格。而且，这些出版物在主要的图书馆也可以找到。过去10年出版的该种类型绿道文献，笔者只找到6本，分别是：查理斯•莱托（Charles Little）（1990）的开山之作《美国的绿道》；D.S.史密斯（D.S. Smith）和P.赫尔姆德（P. Hellmund）（1993）的《绿道生态学》；弗林克（Flink）和斯尔恩（Searns）（1993）的《绿道：规划、设计和开发指南》；法伯斯和埃亨的《绿道：国际运动的开端》（1996）；瑞安（Ryan）和凯瑟（Kathy）（2001）的《21世纪的步道：多用途步道规划、设计和管理手册》以及由环球皮科特出版社（Globe Pequot Press）出版的“铁轨变步道”自然保护协会的《1000条铁轨变步道：案例全编》。

有趣的是，其中至少有3本书只注重绿道的一两个方面，只有两本书全面地看待绿道。史密斯和赫尔姆德的书如同书名所说，关注绿道的生态学。但是，在第5章中大卫•科尔适当地提及游憩功能。这一章的标题是“游憩与自然保护冲突最小化”。有两本书主要关注步道，一本从环境角度，另一本只是对“铁轨变步道”保护协会的成果展示。

这6本书中，莱托（1990）、弗林克和斯尔恩（1993）以及法伯斯和埃亨（1996）的3本书对绿道的定义更为全面。把这几本书归为一组，是因为它们都认识到了绿道重要的自然保护、游憩和历史/文化价值。本文的主要案例也基于相似的内涵丰富的绿道概念。

博士学位论文也同样值得尊重，因为每篇论文都通过了一组专家的审核，与期刊论文相似。作者至今只寻到3篇关于绿道的博士论文。一是路易斯•里贝罗（Luis Ribeiro）（1998）的《文化景观和场所的独特性》，主要研究对里斯本大都市区的一个遗产网络的文化景观进行的保护。第二篇是J. 埃亨（2002）的《绿道作为战略景观规划：理论和应用》。按照埃亨的理论，绿道应该是一种战略景观规划。后者的作者还是上述一本书的合编者。还有一篇博士论文是安•C.卢斯克（Ann C. Lusk）（2002）的《绿道准则：决定美国多种廊道目的地的距离、特征以及对人类需求的满足》。

有关绿道的会议论文自1997年开始激增。笔者发现在4个国内和国际会议中介绍绿道发表绿道论文的人至少可以分为5班人马。1997年第一次在葡萄牙举行的“环境挑战”国际会议发表了J.法伯斯和M.格罗斯（M.Gross）的《从流域管理到绿道规划》（Fábos等，1999a,b），以及《绿道规划对文化与自然的平衡》（Ryan等，2001）。IFLA会议则收录了两篇论文（Fábos，2001；Arslan M.，Erdogan E.，2001）。

4个国际绿道会议的有关信息也没有被忽略。其中两个是由非政府组织“铁轨变步道”保护协会组织的，一次是1998年，一次是1999年，题为“联通”。在这些会议中有很多杰出的绿道方面的发言人，然而遗憾的是，没有公布任何会议记录。另外两个国际会议在欧洲举行，1998年在意大利米兰，2001年在葡萄牙科英布拉。这些会议收录的论文只发放到与会者手里，并没有在会议记录中体现出来。作者希望并预计在未来的10年中，绿道规划者们将意识到在这场重要运动中记录和发表作品的重要性。在过去的10年里，除了这些国内会议，在美国和欧洲还有无数的州内会议。

《绿道项目报告》在国家、州和地方层面对公共机构以及非政府组织公开发表。还有很多公共机构和非政府组织参与到区域研究中（如南密歇根的绿道远景规划）。该规划由“铁轨变步道”保护协会和22家机构协作完成（http://www.railtrails.org.traillink2003）。这些报告大多数印数很少，并且只发给政府机构和非政府组织中感兴趣的人员，从图书馆无法获得，因此并不在可得资料范围内。

世界各地的网络绿道文献越来越多地出现在网站里。这种趋势非常鼓舞人心。新的媒体为有意关注的人们提供了项目信息，各种报告、会议内容，以及最重要的，全球交换信息和想法的可能。现在，研究搜集到5种网站，是致力于绿道规划、设计和管理的。分别是：

（1）高校研究项目/中心。新英格兰绿道联合会于2000年成立。该网站是为其成员建立，有4种类型的信息，包括：新英格兰绿道远景规划；联合会成员之间分享现况的通讯；年会的记录；麻省大学景观设计与区域规划系业已完成的主打项目。

（2）美国联邦政府内务部国家公园管理局网站。这是美国内务部提供的卓越服务。新英格兰绿道联合会研究员杰西卡•艾伦专门搜索类似文献。她发现国家公园服务中心提供了5份列表，其中两份是针对河流和步道，http://www.ncrc.nps.gov/programs/rtca/index.html和http://www.attra.org/guide/rtca.htm。前者定义了河流和步道计划并描述了现在能做到的对不同种类的保护援助。后者列表描述了国家公园管理局的河流和步道保护支援措施。国家公园管理局也开始了绿道规划、实施和管理。为大峡谷国家公园而建的大峡谷绿道是最值得注目的（http://www.nps.gov/grca/greenway）。

（3）非政府组织。有3个非政府组织在过去10年的绿道运动中也举足轻重：保护基金、“铁轨变步道”自然保护协会，以及公共土地信托机构。保护基金在网站（http://www.trailsandgreenways.org）上描述了该组织的任务和目标、绿道定义，并列出最近和现行的绿道项目。网站还列举和描述了他们提供技术支持的文字出版物以及所提供的信息资源。“铁轨变步道”保护协会的网站提供了关于步道和绿道的最新消息，包括基金信息以及发展援助，还列出了10多种技术支持项目。公共土地信托的网站（http://www.tpl.org）描述了迈阿密河的绿道项目、其历史、规划目标、社区参与，以及其他的绿道项目。

（4）州政府。虽然大多数州政府都参与了绿道规划，但是在美国只有两个州——佛罗里达和马里兰有他们自己的绿道运动网站。其中，佛罗里达州政府的绿道网站（http://www.dep.state.fl.us/gwt/）内容更为丰富。网站介绍了佛罗里达对绿道和步道的远景，描述了发展绿道和步道的建议和战略，还有一些公众和土地所有者的留言对其进行完善。绿道和步道系统包括：多用步道、越野自行车道、骑马道、划船路线、登山道以及生态敏感保护区。马里兰绿道网站（http://www.dnv.state.md.us/greenways/）描述了州内绿道系统，包括沿河步道、溪流、山脊线，以及废弃铁路线，还有人类尚未涉足的植物廊道。马里兰绿道系统拥有多种功能，包括水质保护、野生生物生态保护区、线性游憩区、还有必须包含缓冲植被的自然的或者人工开发的步道。到2002年，马里兰已经有超过2 400km的保护廊道，其中1 000km是游憩步道。

（5）城市/自治市网站。在市一级层面上，纽约城市自行车系统是唯一能够找到的网站（http://www.ci. nyc.ny.us/html/bike/gp.html）。纽约绿道规划于1993年公布，包括一个沿自然和人工空间的非机动车道（如铁路和高速公路保留地、河流廊道、滨水区、公园用地）以及必须的城市街道。规划还连接了长岛、新泽西、纽约州北部、康涅狄格州，并通向联结了从缅因州到佛罗里达的东海岸绿道。一旦这个雄心勃勃的城市绿道规划实施，纽约城将有近560km的非机动景观道。这些交通会提高所有人的游憩机会，尤其有益于单车族、步行者以及慢跑族。

网络上的文献资料说明，该技术为绿道规划者提供了非常有用的资源以及很多绝妙的点子，值得在世界各地推广。以下部分论文将描述一个连接美国大型绿色空间的国家规划。研究范围是美国南部的18个州。

3 方法论构建

在描述方法论之前，要先给出规划中绿

道的定义。据文献记载，绿道主要分3种类型，并且越来越多地在总体的绿道系统或网络中交叠：

（1）重要的生态廊道和自然系统；

（2）游憩绿道，多临水、临径、临景；

（3）具有历史遗产和文化价值的绿道（Fábos，1996,p.5）

为了结合众部门、非盈利组织、项目组的提议，整合现有绿道，使绿道更为全面完整，在该案例中应用的方法包括了5个简单步骤。

第一步：研究并绘制所有现存绿道和绿色空间，包括登山线路以及为生态保护、休闲、历史价值而保留的铁路线。

第二步：研究并绘制所有将会增加上述3种绿道和绿色空间的规划建议。

第三步：在全美层次上联结每种类型的绿道。

第四步：为自然保护、休闲和历史/文化资源保护、登山线路以及铁路线路分别进行单一目标的规划。

第五步：进行综合的绿道远景规划，整合所有现存以及将要规划的绿道或绿色空间，并提供其长度和面积的具体数据。

4 美国绿道及绿色空间规划

美国的绿道规划实为完善已故的沃伦•曼宁（Warren Manning）1923年之作——曾经在《景观设计学杂志》上刊登的《国家规划》（pp.1~24）。规划的目的在于，激励景观设计师寻求绿道规划的机会，并加入发展迅猛的绿道运动。

支持该规划的动力有三：首先，1999年的《新英格兰绿道远景规划》为国家尺度的规划铺平了道路。同年，该项目组对《土地》杂志的编辑比尔•威尔士（Bill Welsh）表达了他们对于国家绿道规划的兴趣（Welsh, 1999, p.4）。其次，林恩•E. 米勒（Lynn E. Miller）将20世纪20年代景观设计师沃伦•曼宁前瞻性的国家规划重新介绍和刊登出来（1999,11,P.58）。最后，2000年春，作为绿道研讨会的一部分，笔者特意回顾了美国联邦政府的杰出贡献。上个世纪，这个国家三分之一的景观是政府相关部门的规划和管理成果。综上所述，一个全面综合的国家绿色空间和绿道规划已初见端倪。

然而，面临的挑战是没有任何专项资金支持这个设想，景观设计和区域规划部门只为研究生团队提供了电脑设备、场地和办公用品。

4.1 美国概览

研究范围仅为美国本土，不包含阿拉斯加和夏威夷。48个州的土地面积为7 825 155 Km^2，其中国有面积约为2 600 000 Km^2（《国家地理》，1992，P.20），不过大部分国有土地位于西部山区的落基山脉和喀斯喀特山脉。这样壮观的山脉在世界上也是少有的。美国还拥有绵延数千千米的东、西海岸的海岸线，以及墨西哥湾和五大湖。而作为绿道骨架的河流系统亦广博辽阔，主要河流数以百计。总统委员会关于绿道网络的报告称其为“巨大的环流系统”（1987）。另外，美国有超过256 000km废弃的铁路，现在19 000km以上已经转换成步道，其他也有转换潜力，如此将会在全美形成一个巨大的铁轨步道网络。所有这些资源使得美国有机会创造广阔而高质量的国家绿道和绿色空间网络。

4.2 美国绿道规划的应用

首先，项目组研究并绘制了联邦政府预先留出的绿色空间和绿道，接着简洁扼要地研究并绘制了政府和一些主要非政府组织的规划提案，最后寻找最明显的缺漏，按照上述定义查漏补缺。美国绿道规划意在补全缺漏，那些缺漏即尚未包含在国家绿道和绿色空间系统内的河流或支流，以及海湖的岸线。

4.2.1现存绿道和绿色空间

在美国内务部（USDI）国家公园管理局的体系中，现存的国家绿道有3种名称，即风景步道，历史步道和千年步道。其中有些步道具有双重身份（如历史步道和千年步道）。我们将保护分为两种：总体保护的地区，即作为国家公园和野生保护区管理的地方；以及部分保护的地区，包括内务部土地管理局和农业部森林服务中心管辖的公共土地。土地管理局允许农户在一定的准则下放牧，因此这些地区称为“部分保护地区”。

4.2.2现有绿道和绿色空间规划方案

项目组研究了近年来一个政府项目和两个非政府组织提议的绿道方案。如果这些方案得以实施，将会为步道系统增加50 000km的长度（Ernst等，2000）。政府项目由克林顿总统提出，他指定14条河流为美国遗产河流。克林顿政府的目的是，在内务部国家公园服务中心进行评估后，确定美国所有具有重要历史和遗产价值的河流。然而，新的共和党政府并不拥护克林顿总统的计划。布什在位期间，令人兴奋的遗产河流的设想前景不明。虽然这个设想被暂时搁置，历史表明了这种类型的设想在将来更有利的政治气候中可能再次浮出水面。

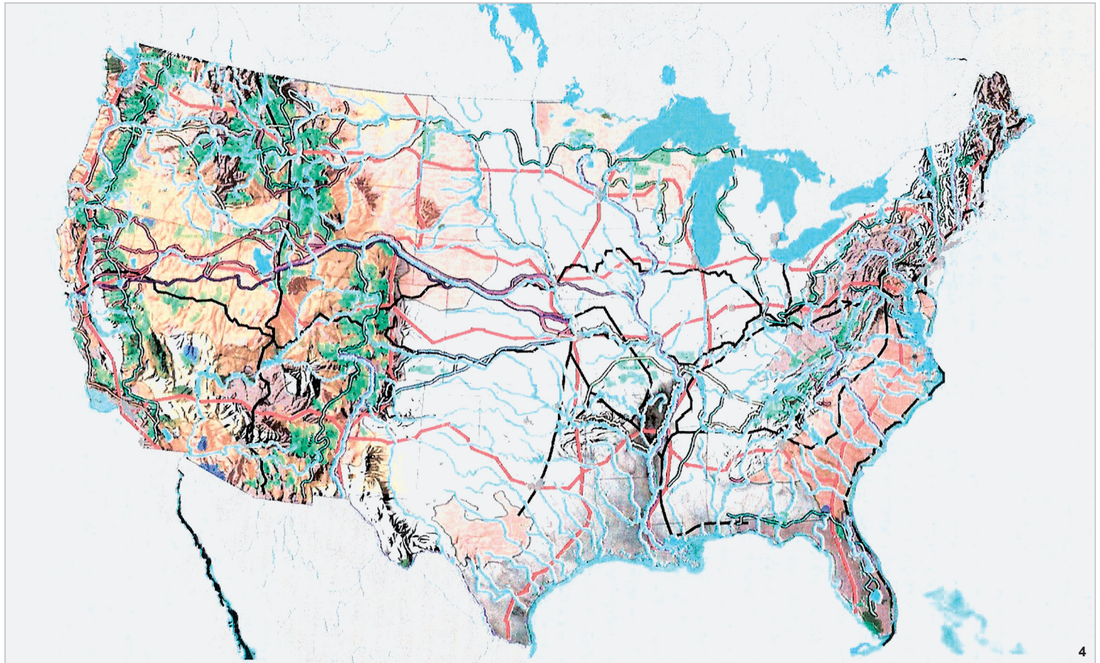
非政府组织“铁轨变步道”协会的前主席大卫•伯韦尔（David Burwell）提出了另一种设想，实施的可能性更高。伯韦尔的想法是在全美建立长约36 000km的国家重要步道联网。按他的设想，这种州以及区域的步道网络会类似于联结美国各地的国家高速公路系统。

第三个为加固保护美国大陆绿色空间的方案，由“野地项目”提出的。该项针对北美大陆的提案得到了《大陆保护》（Soulé 等，1999）一书的大力宣传，提倡建立区域保护区网络。该团队希望能建立生物保护区，在区域甚至整个大陆内恢复生物多样性。最重要的是，他们期望能够通过在核心区实行“自然优先”的方式影响大约二分之一国土的土地利用决策（Soulé and Terborgh，pp. 99~128）。既然美国西部土地权属多数为国有，“野地项目”在全国各地选取了额外的3亿hm^2土地进行有效保护，以达到“大陆保护目标”。

笔者认为“国家野地项目”非常概念化，在提交决策者之前需要更加深入和具体的工作。但是该方案的重要性在于它是由非常权威的科学团队设计，并得到了关注环境的基金会资助。应加大宣传力度，以影响联邦政府的政策和生物多样性保护规划。

4.2.3 麻省大学的绿道方案

国家绿道和绿色空间系统最明显的缺陷就是对于美国的大河缺乏保护。既然人类活动已经影响了这些大河上百年，那么就需要对其拥有的文化价值就进行估量。其次，需要提供并实施规划，对具有重要文化和自然价值的地区进行保护。该提案的最大贡献就是，在克林顿总统提出需评估确定其遗产价值的14条遗产河流以外划定了78条河流廊道。我们假设这些河流可能具有国家级的重要价值，应将其纳入国家绿道和绿色空间系统。我们相信，该规划将显著地加强自然保护：保持水质的同时连接野生生物的生境、增加嬉水几率；保护和恢复美国河流历史遗产。项目组不仅实现了对全美范围主要河流、海岸线的评估，还另外划定了与克林顿政府于1998年7月30日遗产河流计划中提议的那些河流级别相当的78条河。除了划定遗产，还应该研究类似于《麻省河流保护法》（1996年条例的258章）的国家法例，此举对于国家具有潜在的价值。应该评估这一法案，也许美国可以颁布一个适当的河流保护法。我们对于国家规划最重要的补充就是通过增加90 000km的河流廊道来建立一个绿道网络。预计这种绿道网络的实施只能够在联邦政府、州政府、市政府以及私人包括非政府组织的通力合作下才能完成。详细的规划和实施过程可能历时100多年。该设想对1987年的《总统委员会美国户外运动报告》中的提案进行了补充。该报告提出建立“一个有生命的绿道网络，为人们（以及野生生物）在居住地附近提供进入开放空间的机会，像巨大的环流系统一样串联起整个美国”（总统委员会，1987，P.102）。另外，麻省大学项目组认识到一个国家规划同样应当为广大的海岸资源进行规划。但是，由于资金和时间的限制，该研究尚未涉及到。



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最后，绿道有至少3种以上的益处。第一，绿道保护敏感的自然生态系统：主要是沿河流、海岸以及山脊线；绿道维护生物多样性并为野生动物迁移提供通道。第二，绿道网络在大都市区内和郊区为人们提供了大量的游憩机会，可以步行、爬山、骑自行车、游泳、划船，以及其他户外休闲活动。第三，绿道网络为人们提供重要的历史遗产和文化价值，大多数绿道沿河流或海岸分布，这些地区或廊道有将近90%是遗产和文化资源所在地（Dawson，1995；Lewis，1964）。美国绿道规划设想了多功能绿道，并在沿河和海岸边发现了许多相同的共生资源。因此，这一规划为大尺度的国家和区域绿道规划提供了思路。■（李云圣 译 钱瑾 校）

5 讨论与结论

该文首先讨论了美国绿道规划的历史，接着描述了“美国绿道和绿色空间”的国家规划。

附1. 美国绿道及绿色空间规划研究生团队成员包括海迪•恩斯特（Heidi Ernst）、保罗•弗利（Paul Foley）以及安迪•格鲁沙（Andy Galusha）。海迪以此项目作为硕士论文基础。另外，保罗和安迪基于他们关于绿道的知识、兴趣，以及GIS技术，也为研究课题做了必不可少的制图工作。项目组意识到课题的进行需要联邦政府的空间数据，而数据只在公共领域才是免费的。最后，笔者邀请了罗伯特•瑞安（Robert Ryan）共同进行课题研究。以下网址提供全文：[http://www.umass.edu/greenway]

附2. 1999年10月，大卫•伯韦尔在意大利米兰举行的欧洲绿道会议上介绍国家步道网络

附3. 《麻省河流保护法》的目标是：“保护私人或公众的供水、含有贝类的地下水土、野生生物生境以及渔业；控制洪水；避免暴雨破坏和污染”。河流保护包括河流及溪水两侧60m的范围（《麻省河流保护法》，1996，258章）这些区域占了麻省总面积的20%，是麻省绿道网络的绝佳骨架。

4. **美国大陆现存和方案中的绿道和绿色空间。该方案如果实施，将会为全国人民带来220 000km的步道，或者绿道以及约5亿hm^2的保护绿色空间。绿色空间的保护程度分为全部保护和部分保护。还能在保持环境质量的同时为公众提供游憩机会**© Fábos

4. Existing and proposed greenways and greenspaces of the Continental United States. This proposal, if implemented, would provide the population of this country with close to 220 000 km of trails or greenways and around 500 million hectares of protected greenspaces. The level of protection of the greenspaces would range from fully to partial protection. This plan, if implemented, would maintain the quality of environment of the protected land areas while significantly increasing recreational opportunities for the public of the United States. © Fábos

Greenway Planning in the United States: Its Origins and Recent Case Studies

J.G. FABOS. [Emeritus Professor of Landscape Architecture and Planning at the University of Massachusetts Amherst]

Abstract···

After describing the origin of greenway planning in America, the paper traces the beginning of greenway planning during the 1980s and 1990s, and summarizes the greenway literature of these two decades. The result of this literature review concludes that while the greenway movement has resulted in thousands of greenway plans and projects in the USA, it produced only a small amount of publications, which are placed in research libraries. Unfortunately, the greenway reports of greenway projects are published for limited distribution and only a handful of these reports become part of "scholarly literature". Secondly, the greenway reports seldom include relevant literature review or descriptions of the study methodology. Hence, their research and educational value is limited.

The second part of the paper describes a current greenway plan in the United States, which was initiated and done at the Department of Landscape Architecture at the University of Massachusetts. It builds on planning efforts of the US governmental, non-governmental agencies and some visionary planners of the past century. Our team mapped all published greenways and greenspaces; then gathered recent proposals by governmental agencies, non-governmental organizations (NGO) and individuals. Finally, our team made additional proposals, which if implemented would result in an ideal network of greenways and greenspaces at the national level in the USA. This plan would protect all nationally significant and environmentally sensitive corridors and areas or green spaces. It would also provide the population of the United States with increased recreational opportunities and thirdly, it would restore all nationally significant historical and cultural greenway corridors.

In summary, the aim of this national vision plan was to show a plausible planning direction based on the principles of both, landscape and greenway planning. It illustrates the importance of planning greenways comprehensively. It calls for nature protection, for the development of appropriate recreational uses, and for the preservation and restoration of valuable historical/cultural resources. Not surprising, the vast majority of the nation's historical and cultural resources are within river corridors, which constitutes the framework for many greenways corridors. Greenway planning has, indeed, evolved as a planning tool of multipurpose greenway corridors at every scale and planning levels, ranging from sites through municipal and regional to national levels.

Key words···

Greenway Planning; United States; New England

1 Introduction

The author defines greenways as ecologically significant corridors, recreational greenways and, or greenways with historical and cultural values. The first part of this paper traces first the origin of greenway planning back to the early landscape architecture during the second half of the 19th century. Then, it highlights the evolution of greenways over the 20th century. In the second part of the paper, the author presents a greenway planning case study which builds on past and current greenway planning activities. The case study is in the form of greenway vision plans for the United States. The primary focus of the greenway planning is on the protection and appropriate uses of environmentally sensitive areas along river corridors. The secondary focus is on abandoned railway corridors, which can be used as trails that link populated areas.

This paper has two objectives. First, to demonstrate how American landscape architects of the 19th and 20th century created bold visions that affected the land use at the regional, state and national level. The second objective is to present a recent greenway vision plan for the continental United States. The plan builds on the works of landscape architects and previous governmental actions (http://www.umass.edu/greenway).

2 The state of greenway literature

The greenway literature is organized here in five phases. The first phase is the era of Frederick Law Olmsted, Sr., Charles Eliot and Horace W.S. Cleveland, the pioneers between 1867 and 1900. The second phase reviews literature of 1900–1940 landscape planners whose work focused on greenway planning during the first third of the 20th century. The third phase reviews the influence of landscape planners,

I. McHarg, P. Lewis, E.H. Zube and J.G. Fábos and their associates on greenway planning during the post-World War II era, or the decades of the 1960s and the 1970s. The fourth phase is the naming of green-ways (Little, 1990). The fifth phase is the discovery of greenways abroad (Fábos and Ahern, 1996). This series of papers shows how greenway planning has become a worldwide activity or a movement.

2.1 The early landscape architects and greenway planning from 1867 to 1900

The greenway literature of the past decade consistently names Frederick Law Olmsted as the father of the greenway movement in America (Little, 1990, pp. 7–20). Olmsted's most featured and earliest green-way is the Boston Park System, commonly described as the Emerald Necklace. Newton, refers to this park system as a parkway (Newton, 1971, p. 300). See Fig. 1 as prepared by Olmsted and his office in 1867 (Fábos et al., 1968, pp. 64–65). Olmsted's park system of greenways and greenspaces has linked Franklin Park through Arnold Arboretum and Jamaica Park to the Boston Garden and Common. This system is around 25 km long, linking together Boston, Brookline and Cambridge in Massachusetts, and connecting these areas to the Charles River.

Olmsted's pupil, Charles Eliot, expanded on Olmsted's vision, by creating a park system or green-way network for the entire Boston Metropolitan Region of around 600 km2. Charles Eliot's visionary plan linked together five large parks or greenspaces on the outskirts of the Boston metropolis. The linkages were accomplished through five shorter coastal river corridors, such as the Charles River Greenway Corridor to the ocean and the Boston Back Bay area) (Fábos et al., 1968, pp. 57–77; Newton, 1971, pp. 318–336).

The inclusion of the coastal rivers as greenway connectors was a forerunner of the current greenway planning approach. Eliot was an innovative landscape architect who also proposed the first reclamation of an urban coastal area, the Revere Beach for Boston, and the creation of the Boston Park Commission to implement and manage his Metropolitan Park System (Newton, 1971).

Besides Olmsted and Eliot, there were several other landscape architects that planned significant green-ways and greenway networks throughout the United States during the 19th century. The best known among them are H.W.S. Cleveland, who with Theodore Wirth planned a network of greenways for the Minneapolis Metropolitan Region and George E. Kessler who planned parks and park systems in the Midwest. Kessler's most notable works were in Memphis, Tennessee and in Kansas City, Kansas (Fábos, 1991, pp. 6–10; Newton, 1971, p. 481).

2.2 Landscape architects planning greenways from 1900 to 1945

The most notable individuals of the early 1900s were the two sons of Olmsted, known as the Olmsted Brothers, Henry Wright, and Charles Eliot II, the nephew of the first Charles Eliot described above. Today, the majority of the works of these plans of these landscape architects would be considered greenway plans.

The Olmsted brothers continued the visionary and bold planning and design practices of their father, Olmsted, Sr. The brothers were called to Portland, Oregon in 1903 to design a park to celebrate the Lewis and Clark Centennial. Instead of a park, the brothers proposed a 40-mile long park system, simply called the "40-Mile Loop" (Little, 1990, pp. 76–80). According to Little, that initial work by the Olmsted brothers was followed by other greenway planners who expanded the Olmsted brother's loop to 140 miles.

Henry Wright's influence on the profession was also very significant. He has been described as a "regionalist" in the book, entitled, "The American Planner" (Krueckeberg, 1983, pp. 208–224), especially for his input on the Regional Plan for the state of New York in 1926. His overlay maps show layers from forest restoration to river corridor planning (Krueckeberg, 1983, p. 200). He has been equally recognized by his innovative community planning projects, which have included interconnected networks of greenspaces and greenways for Radburn, NJ. This new town was planned by Henry Wright with Clarence Stein from 1929 to 1931, and was recognized by the American Society of Landscape Architect at the Centennial Conference as a unique contribution to the profession (Simo, 1999, p. 111).

Eliot was the landscape architect for the Metropolitan Park Commission. The young Eliot was a forceful and convincing advocate for the park system and had a significant influence on adaptation of the plan by the commission (Newton, 1971, pp. 318–336). Numerous landscape architects of the National Park Service (NPS) were also very much involved in the planning of parkways to make connections for significant recreational landscapes, such as national parks and recreational areas. Among the many parkways of the National Park Service, one of the most spectacular is the Blue Ridge Parkway, which is located near the ridge line along the Appalachian Mountains throughout Virginia from Washington, DC to North Carolina. This 750 km parkway is among the most beautiful and most popular in the United States (Simo, 1999, pp. 88–89).

Another significant plan of this period was the first open space plan for the state of Massachusetts, which was drawn up by Charles Eliot II. In 1928, Eliot II became the landscape architect for the Open Space Commission for the Governor of Massachusetts. A large area of initial open spaces mapped by Eliot II and his associates have been preserved. The most far-reaching portion of this statewide plan was the so called "Bay Circuit Plans". Note in Fig. 3 the broad, green corridor of over 250 km, which encircled the Boston metropolis and connected major wetlands and drainage systems of this region. This plan was not acted upon until the 1950s, and again in the 1980s and the 1990s (Fábos, 1985, pp. 116–117). Eliot's vision was so powerful and so logical, that agencies have rediscovered its relevance three times and already have built numerous trails in this corridor, connecting communities and ecological resources throughout the state.

2.3 The influence of the environmental decades on landscape and greenway planning—1960s and 1970s

Interestingly, the influence of the environmental decades on landscape architecture was most prevalent in the academic environments during the 1960s and the 1970s. Three academic programs at the Universities of Wisconsin, Pennsylvania and Massachusetts served as major centers of landscape planning research, with several seminal publications produced by each.

The University of Wisconsin received national attention through the truly visionary work of Phil Lewis. Lewis identified 220 natural and cultural resources in Wisconsin through a mapping technique he devised during the early 1960s. When he and his team mapped these significant resources in Wisconsin, Lewis and his associates found these resources concentrated along corridors, especially along rivers and major drainage areas. Lewis named these areas "environmental corridors". His mapping, analysis and assessment of these resources was the basis of his Wisconsin Heritage Trail proposal (Lewis, 1964). Lewis' work has been continued with a focus on sustainability (Lewis, 1966). Lewis' environmental corridor concept was used to plan first a major state wide greenway/greenspace system with a focus on protecting environmentally sensitive areas, or river corridors. It is in these areas where human activity can have significant negative effects on water quality and other environmental quality parameters. The greenway movement intuitively recognized this important relationship. River corridors are also where the majority of wetlands and wetland systems are located. Rivers also have carved out valleys and ravines over the millennia. In addition, rivers together with coastal areas have served as nature's highways for centuries and supported the creation of the early human settlements. It is no surprise that Phil Lewis' study of Wisconsin resulted in a list of 220 landscape resources (Lewis, 1964, pp. 102–107). Close to half of his list are natural resources (e.g. waterfalls), while the remainder are cultural resources (e.g. mills and bridges).

It was featured by the January issue of the Landscape Architecture Quarterly under the title "Quality Corridors in Wisconsin". This state-wide plan is seen by the author as one of the most significant greenway plans and as an important foundation of the current greenway planning movement.

During this period, the University of Pennsylvania was chaired by the legendary Ian McHarg, who was a national leader of the environmental movement during the 1960s. Most importantly, McHarg (1969) wrote the book Design with Nature. This book became a truly seminal work and one which has been translated into many languages, distributed globally and read by more than any other book written by a landscape architect. Most importantly, the plans of McHarg, including those featured in his book, provide a very generous system of greenspaces and greenways. Some of McHarg's colleagues (e.g. Spirn, 1984, the author of The Granite Garden) have continued his work with a focus on more urban areas and framework for new towns, and new developments.

Perhaps the most relevant case study for green-ways/greenspaces described by Ian McHarg is a chapter on his plan for the Valley (McHarg, 1969, pp. 79–93). In protecting the "valley floor" from development, around half of the area would be part of a greenway–greenspace network. The result of the McHarg plan for the valley floor is similar to Lewis' "environmental corridors" proposal.

The University of Massachusetts has been very active in landscape planning projects and research under the leadership of Ervin Zube, who often collaborated with this author (Zube et al., 1975; Fábos, 1979, see Chapter 9). In 1970, a new research was initiated by the author under the name METLAND. The objective of the METLAND research was to determine land use suitabilities for all types of development within the fastest growing metropolitan landscapes, hence the name of METLAND, referring to metropolitan landscape, was adopted. The results of the quantitative assessments developed by the team were often similar to the results of the McHarg team. The major difference was that while the McHarg team primarily used the so called "landscape approach", the METLAND teams' research was based more on the "parametric approach". The difference between the landscape and the parametric approach is that the landscape approach is based on "key landscape attributes such as topography, soil, and vegetation" (Fábos, 1974, pp. 158–164, and Mabbutt, 1968, pp. 15–21). While the parametric approach is more quantitative, "which allows the use of infinite number of variables and can compare between and afford greater consistency and its suited to (assessment with) computers" (Fábos, 1979, p. 165).

The METLAND team was perhaps the group whose research continued the longest among landscape architects in the USA during the 1970–2000 period. Its publications were extensive and were disseminated systematically and internationally. The METLAND research provided tools for landscape architects for land-use decision making. This planning tool had significant influence on education and practice in North America, Asia, Australia and Europe.

2.4 The naming of the Greenway Movement, 1980s and the 1990s

Charles Little credits the late William H. White, a prominent environmental writer, who invented and used the term greenways in his 1959 monograph entitled, Securing Open Space for Urban America, published by the Urban Land Institute.

During the 1980s, there were two additional important events which significantly helped the spread of the greenway movement. The first event was a recommendation made by the US President's Commission on American Outdoors Report (1987). The Commission's central recommendation advocated

5. 伊恩·麦克哈格的山谷规划。20世纪60年代早期作为一份报告发表，后来在其代表作《设计结合自然》中再次出现（1969，PP.79-93）。该规划是他在60年代最有影响力的作品之一。麦克哈格提议保护近一半的山谷，并将绿色空间很好地连接起来© Fábos

5. Ian McHarg ’ s Plan for the valley. It was published as a report during the early 1960s and was republished in McHarg ’ s Seminal book, “ Design with Nature ” . 1969 (pp. 79–93). This plan was one of the most influential of McHarg of the 1960s. McHarg ’ s plan called for the protection of over half of the valleys and proposed well connected greenspaces© Fábos

as “a vision for the future: A living network of greenways ... to provide people with access to open spaces close to where they live, and to link together the rural and urban spaces in the American landscape ... threading through cities and countryside’s like a giant circulation system” (President’s Commission, 1987, p. 209). The use of the word “greenways” is seen by the President’s Commission Report as an endorsement of this term. Second, the Commission refers to the river network as a “living network of greenways”, a recognition by the commission of the fact that river edges are where water and land meets, and that greenways do protect the water quality from industrial, urban and agricultural pollutants.

The second important event was the publishing of Charles Little’s seminal book, Greenways for America (Little, 1990). This book provides a good overview and short summaries of sixteen greenway projects. This book is an excellent primer for greenway planning. But, perhaps, its most important effect was that it publicized the greenway planning effort.

2.5 The beginning of an international greenway movement and greenway publications

The author sees the growth of greenway planning and implementation as the fastest among all planning and design activities in the United States. It is judged by the thousands of projects reported at the international/national, state wide, and regional greenway conferences since the naming of greenways during the 1980s. The available publications on greenways, however, are minimal at best. This brief review of the greenway literature attempts to summarize the current state of greenway literature in the USA, provide some explanation and plausible reasons for the lack of publications.

2.5.1 The current greenway literature

The available literature on greenways fall into at least four types: (1) books and journal articles, (2) academic doctoral dissertations, (3) project reports an, (4) information on the World Wide Web.

Books and Journal articles are often thought to represent the most desirable outlet for authors. Publishers of books and journals are reviewed more vigorously than most other publications. In addition, these publications are also found in major libraries. In this category, the author found only six books published during the last decade. These are: Charles Little’s seminal book entitled, Greenways for America (1990); Ecology of Greenways by D.S. Smith and P. Hellmund (1993); Greenways: a Guide to Planning, Design and Development by Flink and Searns (1993); Greenways: The Beginning of an International Movement by Fábos and Ahern (1996); Trails for the 21st Century: Planning, Design and Management Manual for Multi-Use Trails by Ryan and Kathy, (2001) and 1000 Great Rail-Trails: A Comprehensive Directory by the Rails-To-Trails Conservancy, The Globe Pequot Press, Gilford, CT, USA.

It is interesting to note that at least three of these books only focus on one or two aspects of greenways. There are only two of the six books that treat green-ways comprehensively. The book by Smith and Helmund, focuses on ecology of greenways as promised by its title. But, appropriately recreational use is recognized in Chapter 5 by David Cole (pp. 105–122). Cole’s title of this chapter is “Minimizing conflict between recreation and nature conservation”. Two books focus primarily on trails. The first book deals with aspects of environmental issues. The second book on rail trails is just a directory to promote the efforts of the Rails-to-Trails Conservancy.

Three of the six books by Little (1990), Flink and Searns (1993) and the greenway book by Fábos and Ahern define greenways more comprehensively. These are grouped together because each of these books recognize the importance of nature protection, recreation, and historic/cultural values of greenways. The case study of this paper is also based on similar inclusive definitions of greenways as do the authors of these three books.

Academic doctoral dissertation are also highly reputable publications, since each dissertation is approved by a qualified team of readers, and are similar to refereed journal papers. To date this author found only three doctoral dissertations on greenways. The first dissertation by Luis Ribeiro, entitled The Cultural Landscape and the Uniqueness of Place (1998). It is a major research into the cultural landscape conservation of a heritage network in the Lisbon metropolitan area. The second dissertation on greenways was written by J. Ahern, 2002 who is also the co-editor of one of the greenway books described above. This dissertation is entitled Greenways as Strategic Landscape Planning: Theory and Application. According to Ahern, greenways should be recognized as strategic landscape planning activities. The third doctoral dissertation is by Ann C. Lusk, 2002. Her title is Guidelines for Greenways: Determining the Distance to, Features of and Human Needs Met by Destinations on Multi-US Corridors.

Greenway papers presented at conferences have proliferated since 1997. This author has found that four national and international conferences included greenway presentations and published papers from at least five sets of authors. The International Conference on “Environmental Challenges” in Portugal was the first conference held in 1997 which published a paper by J. Fábos & M. Gross, 1997 entitled From Watershed Management to Greenway Planning (Fábos et al., 1999a,b), and the second on Balancing Culture and Nature Through Greenway Planning (Ryan et al., 2001). Finally, the International Federation of Landscape Architects Conference featured two green-way papers, see (Fábos, 2001; Arslan M., Erdogan E., 2001).

Information on four additional international green-way conferences were also identified. Two of the four conferences were organized by the Rails-to-Trails Conservancy, an NGO in the USA, one in 1998 and another in 1999 under the clever title, Making Connections. There were many excellent speakers on greenways at these conferences. Unfortunately, there were no published proceedings printed. The two other international conferences were held in Europe, one in Milano, Italy in 1998 and another in Coimbra, Portugal in 2001. While greenway papers presented at these conferences were distributed to the attendees, they were not published in proceedings. It is hoped and anticipated by this author, that greenway planners of coming decades will realize the importance to record and publish their works of this important movement. In addition to these national conferences, there has been numerous state wide conferences in the United States and Europe during the last decade.

Greenway Project Reports are published for public agencies at national, state and local levels, and often for non-governmental organizations. There were several public agencies and NGOs who were collaborating on regional studies (e.g., a greenway vision plan for Southern Michigan). It was prepared by the Rails-to-Trails Conservancy in collaboration with 22 other agencies (http://www.railtrails.org. traillink2003).

The great majority of these reports are printed in small numbers and are distributed primarily to interested members of agencies and non-governmental organizations. They are not available in libraries, hence they are not part of accessible literature.

Greenway literature on the World Wide Web is being placed on web sites increasingly more frequently. This development is most encouraging and promising. This new media is providing interested people access to project information, reports of all kinds, conferences and most importantly, an ability to exchange information and ideas globally.

To date, our research found five levels of web sites dedicated to greenway planning, design and management. These are:

1. University Research Projects/Centers: The New England Greenway Consortium was established in 2000. The Consortium web site of http://www.umass.edu/greenway was created for its members to have access to four types of information, including: The New England Greenway Vision Plan; newsletters describing ongoing activities the consortium members wish to share with each other; the proceedings of the annual symposium; and full descriptions of master projects done on greenways at the Department of Landscape Architecture and Regional Planning at the University of Massachusetts.

2. The Federal Government’s National Park Service is today the pre-eminent service of the United States Department of Interior who has created web sites on greenways. The New England Greenway Consortium researcher, Jessica Allan did all the web search for this paper. She found five web listings by the National Park Service. Two of the listings focus on rivers and trails, http://www.ncrc.nps.gov/ programs/rtca/index.html and http://www.attra.org/guide/rtca.htm. The first web site listing defines Rivers and Trails programs and describes the different types of conservation assistance that are currently available. The second web site listing describes the National Park Service River and Trails conservation assistance. The National Park Service is also involved in greenway planning, implementation and management. The Grand Canyon Greenway for the Grand Canyon National Park is the most noteworthy (http://www.nps.gov/grca/greenway).

3. Three of the non-governmental organizations have been also very important in the greenway movement during the past decade: Conservation Fund, The Rails-to-Trails Conservancy and The Trust for Public Land.

The Conservation Fund’s web site (http://www.conservationfund.org) describes the organization’s missions and goals, a definition of greenways, and the site lists and describes greenway resources ranging from publications they distribute to technical assistance and information resources they provide.

The Rails-to-Trails Conservancy’s web site (http://www.trailsandgreenways.org) provides news on trails and greenways, including information on funding and development assistance. It also lists a dozen types of technical assistance programs. The Trust for Public Land’s web site (http:// www.tpl.org) describes their Miami River green-way project, its history, project goals and community participation, as well as other greenway projects.

4. Only two states in the United States, Florida and Maryland, were found to have web sites on their greenway activities, in spite of the fact that the majority of the state governments in the United States are involved in greenway planning. The Florida state government web site for green-ways (http://www.dep.state.fl.us/gwt/) is the more extensive web site among the two states sites. The web site illustrates Florida’s vision for greenways and trails and describes recommendations and strategies for developing the Florida greenways and trail systems, which were modified by public and land owners’ comments. The greenway and trail system includes: multi-use trails, off-road bicycle trails, equestrian trails, paddling trails, hiking trails and ecologically significant areas for conservation. The State of Maryland greenway web site (http://www.dnv.state.md.us/greenways/) describes the state’s greenway system that includes trails along rivers, streams, ridgelines and abandoned rail lines, as well as vegetated corridors with no improvements for human access. The Maryland greenway system has multiple functions including water quality protection, ecological areas for wildlife, linear recreation areas, and both natural and developed trails which must include significant vegetated buffers. By 2002, Maryland had over 2400 km of protected corridors, including close to 1000 km of recreational trails.

5. A city bicycle network for New York City was the only web site found during our search of green-way planning at the municipal level (http://www.ci. nyc.ny.us/html/bike/gp.html). The New York City greenway plan was published in 1993. The green-way plan includes a system of bicycle–pedestrian pathways along natural and manmade spaces such as rail and highway rights-of-way, river corridors, water fronts, parklands, and where necessary, city streets. The plan also includes connections to Long Island, New Jersey, Upstate New York and Connecticut, and to the East Coast greenway, which links cities along the East Coast from Maine to Florida. When this ambitious urban greenway system is implemented, New York City will have approximately 560 km of landscaped bicycle and pedestrian paths throughout the city. These linkages are expected to increase recreation opportunities for all, especially for cyclists, walkers and joggers.

This brief literature search on the world wide web suggests that this technology does provide greenway planners with very useful resources and many excellent ideas which are worth emulating in many parts of the world. The remainder of the paper describes a national planning effort to make linkages among large scale greenspaces across the United States. The focus of the study is on the lower 18 states of the US.

3 Methodological framework

Prior to describing the study method, the definition of greenways used in the plan is in order. From the literature reviews it was concluded that greenways fall into three major categories and are increasingly overlapping in comprehensive greenway systems or networks. These are:

(1) greenways of ecologically significant corridors and natural systems; (2) recreational greenways, often near water, trails and scenery; (3) greenways with historic heritage and cultural values (Fábos, 1996,p.5).

Greenway planning method used for this case study includes a simple five step procedure designed to integrate existing greenways, current proposals by all agencies, non-profit groups and the proposals by our team to make greenway into a more complete and comprehensive—more specifically, the five steps are as follows:

Step 1: Research and map all existing greenways and greenspaces including hiking trails and rail-trails set aside for ecological/nature protection, recreational and historic/cultural values. Step 2: Research and map all current planning proposals that will increase greenways and greenspaces in each of the three

categories listed above. Step 3: Make connections for each category of green-ways at the national level for the United States. Step 4: Create single purpose plans for nature protection, recreation, historical/cultural resources and for hiking trails and rail trails. Step 5: Create a composite greenway vision plan, which integrates all existing, current and proposed plans of greenways/greenspaces, and provide statistics in kilometers for greenways and in hectares for greenspaces.

4. Greenways and greenspaces for the United States

The greenway plan done for the United States was an effort to update the work of the late Warren Manning (1923) who published his National Plan in the Landscape Architecture Magazine (pp. 1–24). The objective of the plan, was to stimulate landscape architects to seek out opportunities in greenway planning and to join the rapidly growing greenway movement.

The impetus for this plan for the United States has three sources. First, the New England Greenway Vision Plan of 1999 paved the road for a national plan. The team expressed an interest for a national greenway system to Bill Welsh, the editor of LAND in 1999 (see Welsh, 1999, p. 4). Second, the visionary National Plan of landscape architect Warren Manning from the 1920s was recently reprinted and described by Lynn E. Miller (November 1999, p. 58). Third, as part of a greenway seminar during the spring of 2000, the author's interest was to review the remarkable efforts of the US Federal government, whose agencies have planned and managed one third of the nation's landscapes during the last century. Their federal efforts provide the framework for a more comprehensive national plan for greenspaces and greenways.

The challenge was to undertake this effort without any dedicated funding. The Department of Landscape Architecture and Regional Planning, however, provided the team of graduate students with computer facilities, space and office supplies.

4.1 An overview of the United States

The continental United States is the focus of this study. The states of Alaska and Hawaii are not included. The area size of the lower 48 states is 7,825,155 km2. The Federal Land area is around 2,600,000 km2 in the lower 48 states (National Geographic, 1992, p. 20). The majority of the public land, however, is located in the west in the mountainous regions of Rocky and Cascade Ranges. These mountain ranges are among the most spectacular mountains of the world. The United States is also blessed with thousands of miles of shoreline along the East and West coasts as well as the Gulf of Mexico and Great Lakes. The river system, the backbone of greenways are also very large and extensive in the United States with over a hundred major rivers, that are nationally significant, and constitute that "giant circulation system" flagged by the President's Commission Reports for a greenway network (1987). Finally, the United States has over 256,000 km of abandoned railroads. To date over 19,000 km have been converted to trails. The remaining abandoned railroad tracks have the potential for trail conversion which would create a huge network of rail trails across the United States. All these resources provide the United States with great opportunity to create an extensive and high quality national network of greenways and greenspaces.

4.2 Application of greenways planning to the United States

First the team researched and mapped what has been already set aside by the federal government as greenspaces and greenways. Then the team briefly studied and mapped the ongoing planning proposals of the national government and some key non-governmental organizations. Finally, the team looked for the most obvious gaps, what appears to be the missing links of an ideal greenway network of greenways/greenspaces as defined by the author. The greenway for the United States is a proposal designed to fill the most obvious gaps. The gaps are those rivers or river segments and coastlines of the ocean and lakes which are not yet included in the national system of greenways and greenspaces.

4.2.1 Existing greenways and greenspaces

The existing national greenways have three national designations by the United States Department of the Interior (USDI) National Park Service, namely scenic, historic, and millennium trails. Note, some trails have dual designations (e.g. "historic and millennium"). We identified two categories of protection; mostly protected lands, those areas managed as national parks and wildlife refuges; and partially protected, including the public lands managed by USDI Bureau of Land Management (BLM) and the USDA's Forest Service. The Bureau of Land Management allows grazing of land by farmers using the agency's guidelines, hence, these areas are classified here as "partially protected".

4.2.2 Currently proposed greenways and greenspaces

Our research identified one US Federal initiative and two non-governmental organizations that made significant greenway proposals for the United States in recent years. If these proposals were implemented, they would add another close to 50,000 km to the National Trail System (Ernst et al., 2000). The Federal initiative was done by President Clinton, who designated 14 rivers in the United States as American Heritage Rivers. The goal of the Clinton Administration was to identify all those rivers of the United States which has significant historical and heritage values based on the assessment of the USDI's National Park Service. The new Republican Government has not embraced the initiative of President Clinton. The future of this exciting Heritage River concept is uncertain, under President Bush's tenure. While the Heritage River concept is currently shelved, past history shows that this type of concept may resurface in the future during a more favorable political climate.

Another initiative proposed by David Burwell, past President of the Rails-to-Trails Conservancy, a non-governmental organization has a greater likelihood for implementation. Burwell's vision is to create a network of 22,500 miles or around 36,000 km of nationally significant trails throughout the United States.2 Burwell envisions this network of state and regional trails to be like the National Interstate Highway system which connects state and regional highway networks of the United States.

The third national proposal for adding additional protection to America's greenspaces is proposed by the Wildlands Project. This proposal for continental North America is advocated in a book, entitled "Continental Conservation" (Soulé et al., 1999), and would create a Regional Reserve Networks. This group aims to create biological reserves and achieve regional and continental restoration of bio-diversity. Most importantly they wish to influence land use decisions on about half of the United States in a way to allow "nature to reign" in designated core areas (Soulé and Terborgh, pp. 99–128). Since the western half of the USA is mostly in public ownership, the Wildlands Project has flagged an additional 300 million hectares throughout the country for sufficient protection to achieve their "Continental Conservation Goal".

As seen by this author, the proposal of the National Wildland Project is very conceptual and needs much more work and greater specificity prior to presenting it to decision makers. The importance of this proposal, however, is that it is made by a highly respected scientific group, who are also supported by foundations concerned about the environment. This plan needs to be more publicized to affect policies of the Federal Government and those planning for biodiversity.

4.2.3 Greenways proposed by a University of Massachusetts team

The most apparent gap of the national system of greenways and greenspaces are the lack of the protection of America's great rivers. Since these "great rivers" have been affected by hundreds of years of human use, these areas have cultural value that needs to be assessed. Next, a plan for the protection of areas of significant culture and nature values has to be prepared and implemented. The major contribution of this proposal is the identification of 78 additional river corridors above the 14 Heritage Rivers, designated by President Clinton, which are flagged for assessment to determine their heritage value. The assumption of our team is that these rivers may have nationally significant values which warrant their inclusion in a national greenways and greenspaces system. It is believed by this team that this plan could increase significantly: nature protection by making important connection for wildlife, while still maintaining water quality; could add to water recreation opportunities; and finally could protect and restore the historical heritage of the rivers of the United States. The team envisions a nationwide assessment of major rivers and coastlines and a similar level of designation for the 78 additional rivers, as those rivers which were initiated by the Heritage River program by the administration of President Clinton on 30 July 1998. In addition to heritage designations a national legislation similar to the Commonwealth of Massachusetts River Protection Act (Chapter 258 of the Acts of 1996)3 should be perhaps studied for its potential value for the nation. This act should be evaluated and perhaps an appropriate national river protection act could be enacted for the United States. Our most significant proposed addition to this National plan is to create a network of greenways by adding 90,000 km of river corridors. It is anticipated that the implementation of such a greenway network can be accomplished only through the cooperation of the Federal, State, municipal governments and the private sector, including non-governmental organizations. The process of detailed planning and implementation could take a century or more. The vision of this team complements the proposal made by the President's Commission on Americas Outdoors of 1987. They proposed "a living network of greenways ... to provide people (and wildlife) with areas close to open spaces where they live ... threading through (the United States) like a giant Circulation System" (President's Commission, 1987, p. 102). In addition, the University of Massachusetts team recognized that a national plan should also plan for the huge coastal resources of the USA. However, it was not addressed during this study due to lack of funding and time limitation.

5 Discussion and conclusions

This paper first discussed the history of greenway planning in the United States. Second, it described a national plan "Greenways and Greenspaces for the United States".

There are at least three significant benefits from greenways. First, greenways protect the ecologically significant natural systems: mostly along rivers, coastal areas and ridgelines; greenways maintain bio-diversity and provide for wildlife migration. Second, greenway networks provide people with extensive recreational opportunities within metropolitan regions and rural areas for walking, hiking, bicycling, swimming, boating among many other outdoor recreational activities. Third, greenway networks provide the population with significant historical heritage and cultural values. The majority of greenways are along rivers and seashores. These are the areas or corridors where an estimated 90% of heritage areas and cultural resources are located (Dawson, 1995 and Lewis, 1964). The greenway plan for the United States envisioned multi-purpose greenways and found many of the same co-occurrence of resources along rivers and coastlines. Thus, the plan provide insights for other large-scale national and regional greenway plans. ■

Note1 The team of graduate students were Heidi Ernst who wrote her master's project on this project; Paul Foley and Andy Galusha were also doing the necessary mapping as part of a seminar project, due to their knowledge and interest in greenways and of the geographic information system (GIS) technologies. The team was aware that spatial data base is needed for this study from the federal government, and it is in the public domain that it is available free of charge; finally, the author invited Robert Ryan to co-direct the study. The full report is available on our website at [http://www.umass.edu/greenway].

Note 2 David Burwell presented his National Trail Network Proposal for the United States at the European Greenway Conference in Milano, Italy, October 1999.

Note 3 The purposes of the Massachusetts River Protection Act are: "to protect private or public water supply, ground water land containing shell fish, wildlife habitat and fisheries; provide flood control; and to prevent storm damage and pollution". The river protection includes areas 200 feet on either side of each flowing river and stream (Massachusetts Rivers Protection Act: Chapter 258 of 1996). These areas constitute around 20% of Massachusetts, which provides an excellent framework for greenway connections in Massachusetts.

References

[1]Abbott, J.W.. Creating an organizational structure for the New England Greenway Consortium, Master Project, 2002. Department of Landscape Architecture and Regional Planning, University of Massachusetts, Amherst, MA.

[2]Ahern, J. Greenways as strategic landscape planning: theory and application. Doctoral Dissertation. Department of Physical Planning and Rural Development, Wageningen University, The Netherlands, 2002.

[3]Arslan, M., Erdogan, E.. Greenways and the making of urban form: Ankary City. In: Proceedings of IFLA World Congress, Singapore, 2001, pp. N56–N62.

[4]Dawson, K.J.. A comprehensive conservation strategy for Georgia's greenways. Landsc. Urban Plan. 33, 27–43. 342 J.G. F'abos/Landscape and Urban Planning, 68 (2004) 321–342, 1995.

[5]Ernst, H., Foley, P., Galusha, A.. Greenways and greenspaces for America. Master Project. Department of Landscape Architecture and Regional Planning, University of Massachusetts, Amherst, MA, 2000.

[6]Fábos, J.G.. Planning the Total Landscape: a Guide to Intelligent Land Use. Westview Press, Boulder, CO, USA, 1979.

[7]Fábos, J.G.. Land-use Planning: From Global to Local Challenge. Chapman and Hall, New York, 1985.

[8]Fábos, J.G.. From parks to greenways into the 21st Century. In: Proceedings from Selected Educational Sessions of the 1991/ASLA Annual Meeting, ASLA, 4401 Connecticut Avenue, Washington, DC, October 1991, pp. 1–37.

[9]Fábos, J.G.. Introduction and overview: the greenway movement, uses and potentials of greenways. In: Fábos, J.G., Ahern, J. (Eds.), Greenways—The Beginning of an International
Movement. Elsevier, Amsterdam, 1996,pp. 1–13.

[10]Fábos, J.G.. Greenway planning as part of landscapes planning. In: Proceedings of IFLA World Congress, Singapore, 2001, pp. K89–K104.

[11]Fábos, J.G., Ahern, J. (Eds.). Greenways: The Beginning of an International Movement. Elsevier, Amsterdam, 1996.

[12]Fábos, J.G., Milde, G., Weinmayr, M.. Frederick Founder of Landscape Architecture in America. University of Massachusetts, Amherst, MA, 1968.

[13]Fábos, J.G., Gross, M.. From watershed management to greenway planning. In: Proceedings of the Conference on Environmental Challenges in an Expanding Urban World and the Role of Emerging Technologies. National Center for Geographic Information, Lisbon, Portugal, 1997, pp. 141–145.

[14]Fábos, J.G., Becker, K. Introduction and Overview: For the New England Greenway Vision Plan. Landscape Architecture and Regional Planning. University of Massachusetts, Amherst, MA,1999a.

[15]Fábos, J.G., Lindhult, M., Ryan, R.L.. Making the connections: a vision plan for New England greenways. In: Annual Meeting Proceedings of the American Society of Landscape Architects, Washington, DC, 1999b, pp. 315–319.

[16]Flink, C.H., Searns, R.M.. Greenways: Guide to Planning, Design and Development. Island press, Washington, DC, 1993.

[17]Gunn, C. Vacationscape: Designing Tourist Regions. Van Nostrand Reinhold, New York, 1988.

[18]Krueckeberg, D.A. The American Planner. Methuen, New York, 1983.

[19]Lewis Jr., P. Quality corridors in Wisconsin. Landscape Architecture Quarterly, Washington, DC, January, 1964, pp. 101–108.

[20]Lewis Jr., P.. Tomorrow by Design. Wiley, New York, 1966.

[21]Little, C.E. Greenways for America. Johns Hopkins University Press, Baltimore, 1990.

[22]Lusk, A.C. Guidelines for Greenways: determining the distance to, features of, and human needs human needs met by destinations on multi-use corridors. Ph.D. Dissertation. University of Michigan, Ann Arbor, MI, 2002.

[23]Manning, W.H. A national plan study brief. Landscape Architect (special supplement). Washington, DC , 1923, (July (4)), p. XIII.

[24]McHarg, I.L. Design with Nature. The Natural History Press, Garden City, New York, USA, 1969.

[25]Miller, Lynn E. Environmental conscience before Ian McHarg. Landsc. Architect. Magn. , 1999(89): 58–62.

[26]National Geographic Society. National Geographic Atlas of the World, revised sixth ed. Washington, DC, 1992.

[27]Newton, N.T. Design on the Land. The Harvard University Press, Cambridge, MA, 1971.

[28]President's Commission of American Outdoors. Report and Recommendation. Reprinted as: American Outdoors: the Legacy, the Challenge. US Government Printing Office, Washington, DC, 1987.

[29]Ribeiro, L.F. The cultural landscape and the uniqueness of place: a greenway heritage network for landscape conservation of Lisbon Metropolitan Area. Doctoral Dissertation. Department of Landscape Architecture and Regional Planning, University of Massachusetts, Amherst, MA, 1998.

[30]Ryan, R.L., Lindhult, M.Knitting New England together: a recent greenway plan represents landscape planning on a vast scale, Landscape Architecture Magazine Washington, DC, vol. 90 (2), 2000, pp. 50–55.

[31]Ryan, R., Fábos, J., Csemez, A., Machado, J., Toccolini, A., 2001. Balancing culture and nature through greenway planning. In: Annual Meeting Proceedings of the American Society of
Landscape Architects (ASLA), Washington, DC, pp. 118–121.

[32]Simo, M. 100 Years of Landscape Architecture: Some Patterns of a Century. ASLA Press, Washington, DC. Smith, D.S., Hellmund, P. (Eds.), 1993. Ecology of Greenways, University of Minnesota Press, USA, 1999.

[33]Soulé, M.E., Terborgh. Continental Conservation. Island Press, Washington, DC, 1999.

[34]Spirn, Anne Whiston. The Granite Garden: Urban Nature and Human Design. Basic Books, New York, NY, 1984.

[35]Welsh, B. ASLA Begins Greenway Master Plan for Northeast: The vision plan for a Northeast (NE) greenway may be the first step on a road to a national system. In: The Landscape Architecture News Digest, LAND, Washington, DC, 1999.

[36]Zube, E.H., Cudnohufsky, Fábos, J.G. North Atlantic Regional Water Resources Study: Appendix N. Visual and Cultural Environment. Research Planning and Design Associates, Inc., Amherst, MA, 1970.

[37]Zube, E.H., Brush, R.O., Fábos, J.G. Landscape Assessment: Value, Perceptions, And Resources. Dowden, Hutchinson and Ross, USA, 1975.