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NATURE AND HEALTH

EMERGING KNOWLEDGE INFORMS NEW POLICY DIRECTIONS

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One hundred years of health in US national parks



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Abstract

In 2021, the US Public Health Service and the US National Park Service (NPS) celebrate a century-long partnership (1921–2021) to protect and promote the health of park visitors, neighboring communities, and the nation. Few know that the impetus and justification for the establishment of NPS are rooted in public health. This paper chronicles the park service's 100-year commitment to and experience in addressing health protection and promotion through the years and demonstrates how public health has been intrinsic to the purpose and values of the National Park Service from its inception up to the present day. The paper posits a call to action to our nation's land managers, planners, scientists, political leaders and health officials to build on this tradition to help address some of the most complex and vexing public health issues of the present day, such as the public health implications of a changing climate, and health inequities impacting our nation, and to help parks realize their full potential in contributing to a healthier, happier, more sustainable world.

Public health and public lands

It is well-known that the National Park Service (NPS) was established through the Organic Act in 1916. What may be lesser known is that the impetus and justification for the establishment of NPS have their roots in public health. This paper shines a light on the vital and enduring connection of parks and public health up to the present day, and major milestones marking NPS's dedication to the nation's health, including a 100-year partnership (1921–2021) with the United States Public Health Service (PHS).

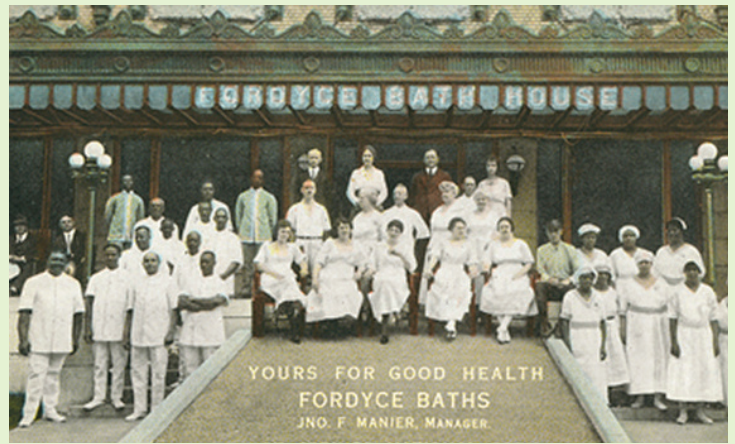
Life, liberty, and pursuit of happiness are fundamentally American ideals—enshrined in the preamble to the Declaration of Independence and grounded in the NPS purpose and mission. Our nation's first parks were established in the 1800s in response to the ill effects of the Industrial Revolution. Many of these parks (Hot Springs Reservation, 1832; Central Park, 1858; and Yellowstone National Park, 1872) were set aside as a means of protecting resources while democratizing clean air, clean water, and outdoor

enjoyment for the health and inspiration of all people.

The Industrial Revolution prompted a growing awareness of the connection between poor living conditions and epidemic episodes caused by such diseases as cholera, yellow fever, smallpox, typhoid fever, and typhus fever. The rapid and unplanned movement of populations into urban areas brought with it increased poverty, dismal sanitary and housing conditions, and reduced exposure to the outdoor, natural environment. These conditions led to greater incidence and prevalence of communicable diseases and poor health.

Several social movements emerged at this time, to ameliorate ill effects of urbanization including the City Beautiful movement, the Playground movement, and the Conservation movement—all of which came to bear on the development of parks. It was not coincidental, therefore, that the founding figures of the national park system felt an urgent concern around threats to human health and identified the need for a national system to protect the most beautiful and treasured natural open spaces in America for enjoyment and use of all people as a fundamental resource to help address these public health threats.

Frederick Law Olmsted Sr., chief architect of New York City’s Central Park, identified urban parks as a public health antidote to the overcrowding, pollution, and disease associated with urbanization. He aptly described Central Park as the “lungs of the city.” Those health credentials were a factor in his appointment to the United States Sanitary Commission as general secretary in 1861, charged with addressing the sanitation and health needs of the Union Army’s military camps. Under his leadership, the Sanitary Commission made recommendations on the location of Army camps, drainage and waste disposal, ventilation of tents, and storage and preparation of food. That appointment would seem to be another clear demonstration of the strong link between public health and parks.¹⁻²



Fordyce Bath House staff, Hot Springs National Park, ca. 1915–1923. The park traces its origins to 1832. | NATIONAL PARK SERVICE

Public discourse during this period continued to argue strongly for the distinct purpose of parks to provide for people’s health and happiness. In 1865, Olmsted further espoused the health benefits of parks, this time to include the benefits of non-urban parks, articulated in the Yosemite and Mariposa Grove Preliminary Report to Congress, in which he penned these words:

It is the main duty of government, if it is not the sole duty of government, to provide means of protection for all its citizens in the pursuit of happiness against the obstacles, otherwise insurmountable, which the selfishness of individuals or combinations of individuals is liable to interpose to that pursuit....

It is a scientific fact that the occasional contemplation of natural scenes of impressive character, particularly if this contemplation occurs in connection with relief from ordinary cares, change of air and change of habits, is favorable to the health and vigor of men and especially to the health and vigor ... and the means for securing happiness.³

Olmsted’s commitment to parks and public health was carried on by his son, Frederick Law Olmsted Jr., like his father a landscape architect who also dedicated his life’s work to the conservation and improvement of parks and contributed to the creation of NPS by helping write the text of the Organic Act. In a 1910 letter to Acting Secretary of the Interior Frank Pierce, the younger Olmsted made clear his view that in the establishment of

> *The nation was now vested with a commitment to build a park system to provide public health and recreational opportunities and to preserve America's most treasured places*

parks, both public recreation and public health are distinctly important. He advised the acting secretary that national parks be managed to promote “public recreation and public health.”⁴

In 1915, the Department of the Interior hosted the Third National Park Conference in Berkeley, California, where Mark Daniels, the newly appointed superintendent of Yellowstone National Park, stated that for the parks to be a success, “We are going to put them to the use for which they were set aside, in other words, if they are going to bring in dividends, not only in money, but in health, happiness, and increased intelligence, they must certainly be visited by the people.”⁵

In the mid-19th century, Congress had begun to protect lands as parks; however, it did so in piecemeal fashion. On April 20, 1832, President Andrew Jackson signed legislation to set aside land in Arkansas that included what is today Hot Springs National Park. Forty years later, Congress passed the Yellowstone Act of 1872, preserving a vast landscape of 3,400 square miles in Wyoming and Montana “as a public park or pleasuring-ground for the benefit and enjoyment of the people.” These efforts triggered additional actions by the federal government to set aside other areas for protection and enjoyment. It was not until 1916, with President Woodrow Wilson’s signing of the Organic Act, that this piecemeal approach to protecting land became unified under one administrative system.⁶

The nation was now vested with a commitment to build a park system to provide public health and recreational opportunities and to preserve America’s most treasured places. Stephen Mather, the first NPS director, communicated his view of parks as more than just places set aside for protection and recreation, but also for promoting education and health. It is significant that these sentiments in his first annual report are aligned

with those of both Olmsted Sr and Jr years prior—by making a distinction between the supplying recreation grounds and furthering knowledge and health.

The first step in the consideration of a general policy for the administration of the national parks is the determination of just what functions they perform. Clearly, they are not designated solely for the purpose of supplying recreation grounds. The fostering of recreation purely as such is more properly the function of the city, county, and State parks, and there should be a clear distinction between the character of such parks and national parks. The latter should constitute a class that is of national interest. In the category of national parks should be no reservation that is of local interest only. What, then, are the functions of our national parks as distinguished from State and local parks? As I view this question our national parks should serve three distinct functions: The stimulation of national patriotism. The furthering of *knowledge and health*. The diverting of tourist travel to the scenic areas of the United States.”⁷

In a 1918 letter to Mather from Secretary of the Interior Franklin K. Lane, he advised that the policy of the agency should be based on three principles: parks should be “maintained in absolutely unimpaired form” for the use of current and future generations, that “the national interest must dictate all decisions affecting public or private enterprise in the parks,” and finally, they should be “set apart for the use, observation, health, and pleasure of the people.”⁸

The promotion and protection role of parks

Land management leaders assigned to park units not only understood the public health benefits of parks as a resource to restore and remedy mental and physical health, they also understood the

> *The PHS Commissioned Corps origins trace back to an act of 1798 to protect the health of sailors and immigrants*

importance of ensuring that a park visit would not be the cause for illness or injury. With the advent of the widely available Model-T automobile and a railroad system making even faraway destinations more accessible, a surge in visitation led to the expansion of hotels and food service in parks and also increased the need to ensure that suitable and safe drinking water and waste water systems would not carry the risk of disease transmission.

The PHS Commissioned Corps

Now charged with administering a federal system of parks, land managers looked to another federal agency for support to help address the sanitation and disease prevention needs of the park system: the PHS Commissioned Corps. Its origins trace back to an act of 1798 to protect the health of sailors and immigrants, and the PHS Commissioned Corps was officially created in 1889. In 1902, Congress broadened the role of PHS Commissioned Corps from solely medical and disease prevention to roles in scientific research, sanitation, water supply, and sewage disposal.

As described in the NPS Annual Report of 1918 and documented in the 1918 Annual Report of the Surgeon General of the Public Health Service of the United States, there was a growing need to address public health issues in parks. In Yellowstone, for example, on the basis of a complaint regarding water contamination in the hotel in the summer of 1917, PHS sent its laboratory car “Hamilton” to provide sanitary inspections of the drinking water and wastewater. During the following four weeks, the PHS officers made “a careful test of all waters in the park that are used for drinking or culinary purposes.” In the report the officer noted that abnormally high water might occur and “would be sure to highly pollute the water supply with Gardiner River water, unless conditions are immediately changed at the pump house.” He reported that notices were posted “ordering the water boiled before using it for drinking or culinary purposes.”⁹⁻¹⁰ Another report in 1921 documented the work of PHS Sanitary Engineer Harry B.

Hommon, who was sent to conduct sanitary surveys of Yellowstone, Yosemite, Sequoia, and General Grant (now Kings Canyon) National Parks to inspect the water supplies, sewage, and garbage disposal; provide mosquito control; and supervise and inspect milk supplies and kitchen sanitation.¹¹ These reports were followed by many others documenting the work of PHS Commissioned Corps officers assigned to a growing number of parks.

The value of the officers assigned to NPS and the partnership between the National Park Service and PHS was noted early on and documented in the 1922 NPS Annual Report:

From this brief review of the effective work of the Public Health Service the visitor to the parks may feel assured that his health is as zealously guarded as in the town or city whence he comes. Due to the constantly increasing numbers of visitors to the parks from year to year larger demands for adequate water supply, garbage and sewage disposal, and general camp sanitation are made and must be met. With the cooperation of the Public Health Service we know what is essential to establish a satisfactory standard of sanitation; it depends only on the amount of funds furnished by Congress for this work how rapidly this standard can be attained from year to year... This work by the Public Health Service furnishes one of the outstanding examples of effective cooperative work on the part of one bureau of the Government with another, and assuredly is conducive toward the most efficient functioning of each bureau, including the wise expenditure of Federal moneys for the work involved.¹²

In addition to the critical sanitation work the PHS officers did throughout the years, their role expanded to include medical services. In 1931, officers were assigned to provide hospital service in Yellowstone, Grand Canyon, Yosemite, Crater



Yosemite National Park | NATIONAL PARK SERVICE / CICELY MULDOON

Lake, Sequoia, and Mesa Verde National Parks, and the service of physicians and trained nurses were available in all the major parks. Hot Springs National Park operated a free clinic in connection with a government-run free bathhouse.¹³ Today, the clinical support continues, with a PHS medical team at Yosemite National Park providing care to park employees, residents, community members, and visitors.

This dual commitment to promote parks as a health resource and to mitigate disease risk

to visitors in parks resulted in a 1921 decision by PHS to assign public health officers in the Commissioned Corps to support park decisions to protect human health. In 2021, NPS and PHS celebrate their 100-year commitment to public health through this partnership. Over the last 100 years, this commitment has served as a source of pride in the accomplishment of the NPS mission across the decades and is evidenced in annual reports and strategic plans, including the 50th and 100th anniversaries of NPS leading up to the present time¹⁴⁻¹⁹



The partnership between the National Park Service and the US Public Health Service was formalized in 1921 during the tenure of NPS Director Stephen T. Mather (left) and Vice Admiral Hugh S. Cumming, the surgeon general (right). | NATIONAL PARK SERVICE; LIBRARY OF CONGRESS

The formal agreement was put in place between NPS Director Stephen Mather and Vice Admiral Hugh S. Cumming, the fifth US surgeon general. The intent was to provide sanitary engineers, physicians, and nurses of PHS to:

cooperate with superintendents of the national parks and custodians of the national monuments on all problems of sanitation in parks. The work consisted of inspection of hotels, lodges, and all other places where operators handled or served food products or provided lodgings; inspection of automobile and housekeeping camp grounds and Government messes; inspection of water supplies, sewage-treatment plants, and garbage incinerators; preparation of plans for water supply systems, sewage treatment plants and garbage incinerators; mosquito-control work; and miscellaneous activities pertaining to sanitation.²⁰⁻²¹

Looking to the next 100 years of health

As the nation throughout the years has continued to add more park units to the system, now more than 420 in total and at least one in every state, the scope of public health needs in parks have grown and so, in turn, has the diversity of public health professionals required to meet these needs. NPS has hired civilian health and safety professionals and continues to assign PHS Commissioned Corps officers through an agreement with the Department of Health and Human Services, under the direction of the US Surgeon General. Today, nearly 60 public health officers, with expertise in engineering; epidemiology; environmental health; occupational, human, and veterinary medicine; and science and health services administration, serve in every region across the national park system to provide public health support. In 2009 that agreement was extended to the Department of the Interior and all its agencies; now there are several officers at the Bureau of Indian Affairs, the US Fish

> Even after 100 years, the focus of public health duties has not altered greatly, with a continuing charge to help park managers ensure food systems, drinking water, wastewater systems, and recreational waters meet health regulatory codes

and Wildlife Service, and supporting leadership of the Department of the Interior.

Even after 100 years, the focus of public health duties has not altered greatly, with a continuing charge to help park managers ensure food systems, drinking water, wastewater systems, and recreational waters meet health regulatory codes. Officers also provide engineering services, such as project review and management of a multiplicity of park system facilities, industrial hygiene services, a range of medical services, and wildlife health services. In addition, they conduct disease surveillance, investigate outbreaks, and implement

mitigation strategies to protect park visitors from diseases, such as rabies, plague, tularemia, tick-borne illnesses, norovirus, and, most recently, Covid-19.

To solidify its commitment to health promotion and the role of parks as a health resource, in 2011 the NPS established the Healthy Parks Healthy People program. It works to advance the fact that all parks —urban and wildland— are cornerstones of people’s physical, mental, and spiritual health and their social well-being, as well as contributing to the sustainability of the planet.

(left) US Public Health Service officer inspecting water tank at Big Bend National Park; (right) PHS officers inspecting food at Independence National Historical Park.

NATIONAL PARK SERVICE





The 19th Surgeon General, Vice Admiral Vivek H. Murthy (center), and Dr. Robert Zarr, Pediatrician, Unity Health Care, Founder and Medical Director of Park Rx America (left), lead children on a walk on the first National Park Prescriptions Day, hosted by the National Park Service, Office of Public Health, 2016. | NATIONAL PARK SERVICE

Building on the best available science, NPS has identified a set of Healthy Parks Healthy People promising practices on “what works for health,” for national expansion. Examples include “doctor-led” programs (park prescriptions, walk with a doc, art therapy); “self-led” fitness programs (running, walking, fishing, camping, bicycling); and “healthy habitat” programs (green parks, quiet parks, smoke-free parks, healthy concessions). By promoting parks as a health resource, the Park Service aims to bring about lasting change in Americans’ lifestyle choices and their relationship with nature and the outdoors, with a vision for parks to help create “a healthy, just, and sustainable world.”^{22–24} These programs often target populations most in need of them, such as military, veterans, youth, elderly, and populations of color, whose access to and utilization of parks have often been limited.

The NPS founders were resolute that parks are a

health resource, and this notion has continued to be proven through mounting scientific research over the last two decades demonstrating the myriad health benefits of human connections to nature and the outdoors. The need for parks to promote health and well-being has never been more salient to the American public than today, as this nation faces the worst pandemic to strike in 100 years. Through the support and guidance of the public health professionals assigned to NPS, the agency has been able to safely continue its commitment to provide resources for recreation, enjoyment, and health. Even at the height of the first wave of the Covid-19 pandemic, 96% of all outdoor spaces in the national parks were open to the public.

While these are challenging times, NPS has been able to demonstrate a healing aspect to the pandemic—providing beautiful, open space to heal and restore. But there is more. Through this



Family at Urban Kids Fishing Derby on National Mall | NATIONAL PARK SERVICE / DIANA B. ALLEN

pandemic we have seen that when there is less traffic, the air is cleaner, the night skies are clearer, and you can see the stars more vividly. Waterways lose their turbidity and become crystal clear. You can see the fish. All that is becoming more visible in the natural world is beginning to stir in many of us a new consciousness that there are a few things we need to change in order to build back a stronger, healthier, and more sustainable world. And perhaps this pandemic has demonstrated that, through sustained cooperation and commitment to advancing and protecting the role of parks as a health resource, we can provide these precious resources for generations to come.

The year 2021 marks a hundred-year milestone for NPS and the country. NPS, through its commitment to health and with the support and guidance of health professionals, has demonstrated its leadership role in addressing the most pressing health issues of our nation. These 100 years of experience now position and call upon the agency to continue this public health leadership role. NPS will need to address public health issues in

the forefront of all its work. These issues include a changing climate that will bring new tropical diseases, and increasing prevalence of fires, floods, and tropical storms.

Furthermore, access to quality parks and greenspace for all people can serve as a social equalizer. These special places not only help to prevent illness and disease, they provide a remedy for all people to address health inequities, and to lead healthier, happier, more fulfilled lives. Because so few people know of the rich and robust history and capacity of NPS to address both public health promotion and protection, the agency may be undervalued for its critical role in addressing some of the most complex and vexing public health issues our nation will confront over the next 100 years. This is a call to action, not only for our park managers and public health officials, but for the scientific community to use our parks as living laboratories to better understand the problems and solutions that can carry us into a healthier, happier, more sustainable future.

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