

**Wetlands Explained:
Wetland Science, Policy, and
Politics in America**

WILLIAM M. LEWIS, JR.

OXFORD UNIVERSITY PRESS

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PREFACE

Wetland science is a new and rapidly evolving branch of ecosystem science, and wetland regulation is a new and rapidly evolving sociopolitical enterprise. The two have an intense relationship that is in many ways reminiscent of the relationship between nuclear physics and national defense 50 years ago. Regulatory initiatives constantly raise unanswered scientific questions, while scientific study supports or calls into question regulatory practice; both regulation and science develop in an atmosphere that is highly charged politically.

With a few notable exceptions, writings on wetlands have been directed to individuals who have special knowledge of some aspect of wetland science, policy, or regulation. Concise overviews of the entire field without the presumption of special knowledge are difficult to find, and yet they are essential in broadening the general accessibility of this inherently multidisciplinary subject. The purpose of this book is to bring together, in compact form, a broad scientific and sociopolitical view of U.S. wetlands, without assuming that the reader has a specialized background.

This work stems from my association with the National Research Council's Committee on Wetland Characterization (1994–1995). The committee's report, which is cited at numerous points in this book, is my point of departure in trying to make this diverse subject matter as transparent as possible to nonspecialists. I am grateful to the members of the NRC committee; many of them have given me valuable information as I worked on this book. I am especially indebted to former

committee members M. Strand, F. Bosselman, and C. Johnston, and I thank David Cooper for the cover photograph. Among others who have helped me are P. Diggle, J. Gosselink, F. Dahm, M. Davis, S. David, R. Bernstein, J. Kitchell, and J. Kusler, all of whom I exonerate from errors that I may have made in using what they have given me.

Boulder, Colorado
1 August 2000

W. M. L. Jr.

CONTENTS

1. Where We Are, and How We Got Here, 3
2. What a Wetland Is, and Isn't, 27
3. What Wetlands Do, and How They Do It, 41
4. Water Is as Water Does, 65
5. Mother Earth, 81
6. The Cast of Characters, 105
7. Eye of Newt, 119
8. Once and Future Wetlands, 127

References, 135

Index, 143

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Wetlands Explained

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WHERE WE ARE, AND
HOW WE GOT HERE

English is a subtle language with many words that offer fine shades of meaning, but it also can be blunt and unequivocal. Dictionaries were not made for words such as hairdo, ballpark, or pigpen. The law, however, as practiced by Americans, can mutate the meaning of even the humblest word. If the law concerns itself with pigpens, then we must know whether a pigpen still exists when the pigs are removed and, if so, for how long. We must know if a pen originally built for cattle can become a pigpen if occupied by pigs and if pigpens are the same in all parts of the nation. In short, we must have federal guidance, regional interpretations, legal specialists, and technical authorities on pigpens. So it is with wetlands.

The chapters of this book will show how troublesome the definition of wetlands has become since the federal government began regulating them. In the meantime, it will suffice to define wetlands informally as those portions of a landscape that are not permanently inundated under deep water, but are still too wet most years to be used for the cultivation of upland crops such as corn or soybeans. Wetlands, in other words, coincide pretty well with the common conception of swamps, marshes, and bogs.

The Eyes of the Beholder

Government has had its hand in wetlands for about 150 years. Between the 1850s and 1970s, the federal government was intent on eliminating

wetlands. Since then, it has been equally intent on preserving them. An individual who behaved in this manner would seem at least irresponsible. Many critics of federal wetland policy have in fact given the government a sound thrashing for its inconsistency, but the shift from elimination to protection of wetlands has continued nevertheless.

Blaming government is the duty of a free people, and also good sport. Even so, the obvious truth about wetland regulation is that government has merely reflected a change in public attitude toward wetlands. Most Americans now believe that wetlands should be saved throughout the nation, except possibly on their own property. Americans did not always feel this way.

Most European colonists of North America came from homelands that were essentially tame. By the middle of the eighteenth century, much of the European landscape was either plowed or grazed, and eradication of forests had been in progress since Neolithic times.¹ English wetlands were progressively diked in the Middle Ages to make way for grazing and cultivation and were drained on a massive scale beginning in the last half of the seventeenth century.² In contrast, the North American landscape that Europeans colonized was as wild as any on Earth. What is now the conterminous United States originally included 220-million acres (now approximately 100 million) of swamp, marsh, and bog, even before the subsequent addition of Alaska's 170-million acres of wetlands (Dahl 1990). Swamps extended broadly along many rivers, and the uplands were speckled with small swamps and marshy pockets. The United States also had several wetlands of global significance, including the Everglades, which persist today in altered form; the bottomlands of the lower Mississippi, which are now reduced but still extensive; and the Kankakee marsh, which once covered a large portion of upper Illinois and Indiana but has now essentially disappeared (figure 1-1).

1. According to observer Tobias Smollett, the British landscape was, by the 1760s, "smiling with cultivation . . . parceled out into beautiful enclosures" (Briggs 1983).

2. Bosselman's (1996) research showed that the diking of common wetlands to prevent the entry of floodwaters occurred even prior to historical record and that a profitable escalation of wetland conversion through drainage in the second half of the seventeenth century financed by the English aristocracy led to progressive restriction of public access to wetlands. Bosselman speculates that the drainage effort, which eventually was accelerated with the introduction of the steam engine, may have been inspired by the great success of the Dutch in draining and diking inundated lands on a large scale.

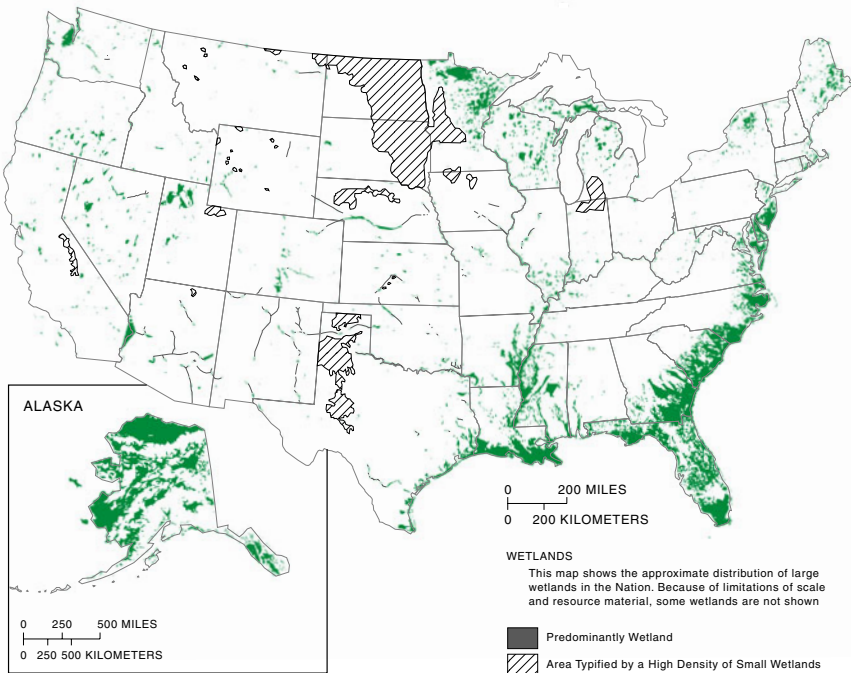


Figure 1-1. Distribution of wetlands in the United States (Winter et al. 1998).

Wetlands were a nuisance to colonists, as they had been in Europe.³ While they produced fish, fur, fowl, and fiber, they also impeded transportation and were impossible to cultivate, except in the rice-growing regions. When drained, however, many wetlands yielded rich soil capable of sustaining high yields of crops that tapped centuries of natural nutrient accumulation. Thus, wetlands were viewed as undeveloped agricultural resources, as they had been in Europe.

In 1850, the U.S. Congress passed the Swamp Land Act, which

3. Wetlands were designated during medieval times and well afterward as “waste” (Bosselman 1996). The modern connotation of this term may be misleading, however, in that the wholesale conversion of wetlands in England generated massive political unrest as the benefits of wetlands were lost to large numbers of people. The growing public claim of control over private wetlands in the United States is in a sense a reversal of the sequence of events that occurred in England during the seventeenth century.

was intended to encourage the conversion of wetlands to agriculture or other uses. Congress reasoned that it could encourage the conversion of “swamp and overflowed lands” to agricultural use by ceding them to the states, which would through their own initiative or that of their citizens be able to finance a conversion to agricultural use. A total of 64-million acres eventually passed to the states in this manner. The identification of these lands was so loose as to make the present procedures for identification of wetlands seem an exact science (Bosselman 1996).

The Swamp Land Act of 1850 and its reformed successor (1855) were ineffective in making the large-scale conversions that were originally intended by Congress. The swamp land acts did, however, foreshadow the federal and public mind-set toward wetlands, which was reflected over the next century or more in many schemes to subsidize and encourage the conversion of wetlands. Governmental and private efforts had reduced the total acreage of wetlands in the United States by about 50% as of the mid-1980s (Dahl 1990).

Under the Influence of Ducks

One of the earliest sustained efforts to protect wetlands was that of duck hunters, who have been numerous in North America since about 1870, when effective shotguns first became widely available. In fact, duck hunting for decades ranked with golf and five-card stud as a pastime among CEOs and lawmakers. Thus, when decline in migratory waterfowl populations became noticeable, some weighty political and financial forces began to support the preservation of wetlands. Biologists had made a connection between the decline of flyway populations and drainage projects (figure 1-2); one remedy for fading waterfowl populations seemed to lie in aggressive purchase and lease of habitat.

Federal efforts to sustain waterfowl populations center around the National Wildlife Refuge System, which evolved in cumulative fashion beginning near the turn of the century at the initiative of Presidents Harrison and Roosevelt. This system, which is actually a loose confederation of sites administered for various purposes by the U.S. Fish and Wildlife Service, comprises 442 units totaling 91-million acres, of which 76 million are located in Alaska. While managed according to various objectives, maintenance of migratory waterfowl populations

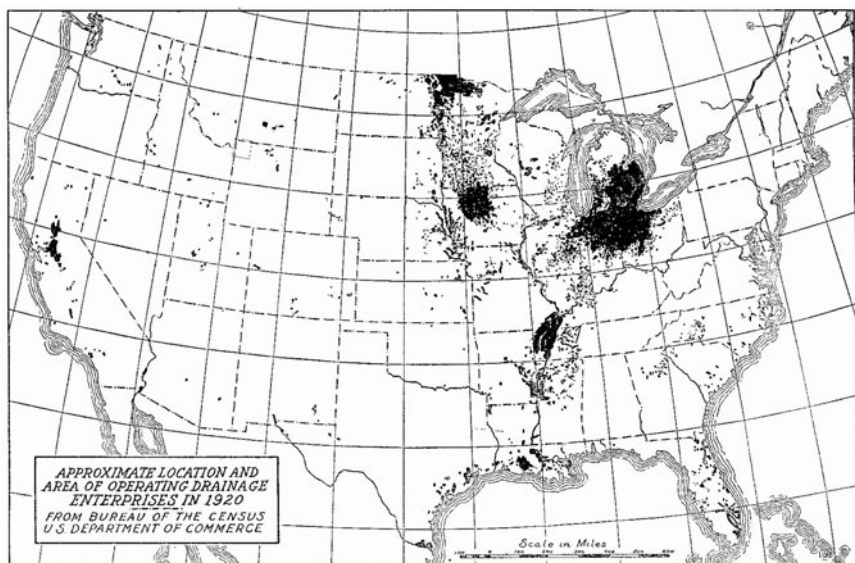


Figure 1-2. A map of the location of drainage projects in 1920, published as part of an effort to document the connection between decline of waterfowl and elimination of wetlands (Phillips and Lincoln 1930).

through habitat preservation is a major underlying motivation for the entire system. Legislation that has given longevity and direction to the system includes the Migratory Bird Treaty Act of 1918 and the Migratory Bird Conservation Act of 1929, the latter of which explicitly recognized the need for acquisition and preservation of habitat. Financial support for the system in recent times has come from the Migratory Bird Habitat Stamp Act of 1934 (duck stamp fee for hunters) and the Land Water Conservation Act of 1964, which authorizes the collection of user taxes and energy taxes for land acquisition (Fink 1994).

The continuing strength of interest related to duck hunting is well illustrated by the wetland conservation of Ducks Unlimited (DU), a nonprofit organization primarily oriented around waterfowl hunting. DU, which currently has a membership near 600,000, has raised approximately 1-billion dollars, much of which has been used to protect approximately 1-million acres of waterfowl habitat (Ducks Unlimited 1997). Conservation of wetlands also has been promoted by other