

JSTOR

[Skip to Main Content](#)

- [JSTOR Home](#)
- [Search](#)
- [Browse](#)
- [MyJSTOR](#)
- [Get Access](#)

Click to Show/Hide Navigation

[Skip to Main Content](#)



- [Login](#)
- [Help](#)
- [Contact Us](#)
- [About](#)



You are not currently logged in through a participating institution or individual account. See [access options](#) for more information.



Creating and Restoring Wetlands

William J. Mitsch, Xinyuan Wu, Robert W. Nairn, Paul E. Weihe, Naiming Wang, Robert Deal and Charles E. Boucher

BioScience

Vol. 48, No. 12 (Dec., 1998), pp. 1019-1027+1029-1030

Published by: [University of California Press](#)

Article Stable URL: <http://www.jstor.org/stable/1313458>

10.2307/1313458

[« Previous Item](#) [Next Item »](#)

You do not have access to this content through JSTOR.

You may have other access options through College of Mexico.

Go to Article

Rights and Permissions

- [Request Permissions](#)
- [JSTOR Terms And Conditions](#)



UNIVERSITY OF CALIFORNIA PRESS
JOURNALS + DIGITAL PUBLISHING

This Issue  Search

- [BioScience](#) >
- [Vol. 48, No. 12, Dec., 1998](#) >
- Creating and Restori...

Preview

If you need an accessible version of this item, please [contact JSTOR User Support](#). [View Full Screen](#)
[DOWNLOAD \(\\$14.00\)](#)

Creating and Restoring Wetlands

A whole-ecosystem experiment in self-design

William J. Mitsch, Xinyuan Wu, Robert W. Nairn, Paul E. Weihe, Naiming Wang,
Robert Deal, and Charles E. Boucher

Wetland creation and restoration are carried out frequently in the United States to mitigate the loss of wetlands due to almost any human development (e.g., shopping centers, highways, suburban developments, and coastline manipulation). These practices have been controversial because of uncertainty about what is necessary to create and restore these important ecosystems and what constitutes “success” of the new wetlands (Roberts 1993, Mitsch and Wilson 1996, Young 1996, Zedler 1996, Malakoff 1998). Yet if done properly, the creation and restoration of ecosystems in general, and of wetlands in particular, provide opportunities for enhancing the ecosystem services to humans, which have been estimated to provide the equivalent of \$33 tril-

William J. Mitsch (e-mail: mitsch.1@osu.edu) is a professor and Naiming Wang is a postdoctoral researcher at the School of Natural Resources, The Ohio State University, Columbus, OH 43210. Xinyuan Wu is an assistant professor in the department of Rangeland Ecology and Management, Texas A&M University, College Station, TX 77843. Robert W. Nairn is an assistant professor at the School of Civil Engineering and Environmental Science, University of Oklahoma, Norman, OK 73019. Paul E. Weihe is an assistant professor in the Biology department, Central College, Pella, IA 50219. Robert Deal is a professor in the Department of Natural Science, Shawnee State University, Portsmouth, OH 45662. Charles E. Boucher is a researcher at the Ohio Environmental Protection Agency, 1685 Westbelt Drive, Columbus, OH 43228. © 1998 American Institute of Biological Sciences.

**A hydrologically open
created wetland can
develop, through self-
design, a diverse
assemblage of species
even where no
propagules existed before**

lion per year worldwide (Costanza et al. 1997, Daily 1997).

Ecosystem creation and restoration in general, which is sometimes referred to as ecological engineering (Mitsch 1993, 1996a), is a relatively new field that, although well developed in practice, needs a sound foundation in ecological theory to support its many empirical findings. Indeed, ecosystem restoration has been called the “acid test” of some ecological theories (Bradshaw 1987, 1997) because attempts to put ecosystems back together have often shown that theory does not always match practice. If done in a research setting, ecosystem creation and restoration make it possible to investigate theories about ecosystems, such as self-design and self-organization.

Creating and restoring wetlands

Wetlands are created and restored for a number of purposes, including habitat replacement, water-quality

enhancement, and flood minimization (Mitsch and Gosselink 1993). The most controversial practice of this type is the creation or restoration of wetlands to replace wetlands lost or destroyed elsewhere, a process known as wetland mitigation. Some ecologists believe that there is a lack of knowledge on wetland creation and restoration and that wetland mitigation is an implicit license for developers to drain wetlands (Roberts 1993).

A number of authors—Erwin (1991), Kentula et al. (1992), Sifneos et al. (1992), Atkinson et al. (1993), Reinartz and Warne (1993), Erwin et al. (1994), Zedler (1996), and Wilson and Mitsch (1996)—have described specific cases in which attempts were made to determine the functional success of these replacement wetlands. Erwin (1991) found that the success rate of wetland mitigation in South Florida was very low; only approximately half of the required 430 ha of wetlands had been constructed, and 24 of 40 projects (60%) were incomplete or had failed. Failure was generally associated with improper hydrologic conditions in the new wetlands. Kentula et al. (1992) found a net loss of wetland area in Oregon and Washington from such a replacement process. In what may have involved an unrealistic goal for wetland creation, an attempt to create a 12 ha salt marsh in southern California (Zedler 1996) was recently declared a failure because it did not provide habitat for the endangered light-footed clapper rail, despite more than a decade of



End of preview. [Back to top.](#)

BioScience © 1998 [University of California Press](#) and [American Institute of Biological Sciences](#)

Purchase a PDF

Purchase this item for \$14.00 USD and download it as a PDF.

ADD TO CART



How does it work?

- 1 Add this item to your cart.
- 2 Check out using a credit card or bank account with [PayPal](#).
- 3 Download the PDF from a link in your email or from your MyJSTOR account.

[Enter your token or email](#) if you've already purchased this item.

Think you might have access to this item via your library? [Login](#).

- [JSTOR Home](#)
- [About](#)
- [Search](#)
- [Browse](#)
- [Terms and Conditions](#)
- [Privacy Policy](#)
- [Cookies](#)
- [Accessibility](#)
- [Help](#)
- [Contact us](#)

JSTOR is part of ITHAKA, a not-for-profit organization helping the academic community use digital technologies to preserve the scholarly record and to advance research and teaching in sustainable ways.

©2000-2013 ITHAKA. All Rights Reserved. JSTOR®, the JSTOR logo, and ITHAKA® are registered trademarks of ITHAKA