Quotable Quotes

Because of uncertainties in restoration and the experimental nature of many restoration projects, the principles of **adaptive management** are potentially useful in both planning and managing restoration projects toward a greater probability of success.

(Thom, R.M. 1997. System-development matrix for adaptive management of coastal ecosystem restoration projects. Ecological Engineering 8:219-232)

Quotable Quotes

At the very least, the understanding gained with a project that ‘failed’ to meet performance criteria can be incorporated into planning the next project.

(National Research Council Academy of Sciences 1992. Restoration of Aquatic Ecosystems. National Academy Press, Washington D.C. P. 552.)

Quotable Quotes

"An **adaptive assessment** approach may well be needed, in order to document both the benefits that have developed and the problems that remain. Early assessments may suggest additional items to add to the monitoring program or identify attributes that are not useful and may be dropped."

(Zedler, J.B. and J.C. Callaway 2000. Adaptive Management of coastal ecosystem restoration projects. Ecological Engineering 15:211-225)

Quotable Quotes

"The duration of a monitoring and management program for a restoration project is controversial, and a growing body of evidence on restored and constructed systems shows that most aquatic systems do not reach stability in less than **5 years**."

(Thom, R.M., and K.F. Wellman 1996. Planning aquatic ecosystem restoration monitoring programs. Pacific Northwest National Laboratory, Richland Washington: final report prepared for US Army Corps of Engineers, Institute for Water Resources, Alexandria, VA, IWR Report 96-R-23.)

Quotable Quotes

"Transfer of the technology or lack of technology to users is a major problem. Instead, the knowledge and experience gained are buried in countless monitoring reports or kept as private knowledge as a business. Restoration failures should lead to better projects and should be part of an iterative process. Unfortunately, the construction of many restoration projects concludes the work and no lessons are learned to improve the practice."

(Hackney, C.T. 2000. Restoration of coastal habitats: expectation and reality, Ecological Engineering 15:165-170)

Quotable Quotes

Relative to Adaptive Management needs:

"A simple check-list of conditions or data sheet with regularly sampled attributes ('mindless monitoring') may not be responsive to this need. Investigators who are trained to interpret sampling data and identify problems are needed."

(Zedler, J.B. and J.C. Callaway 2000. Adaptive Management of coastal ecosystem restoration projects. Ecological Engineering 15:211-225)

Quotable Quotes

"The challenge is how to recognize and deal with the uncertainty, given that projects are ecologically young and that our knowledge of the process of restoration is evolving. One way to deal with the uncertainty is to use scientific principles of hypothesis testing and model building in an **adaptive management** framework. In this way, options can be systematically evaluated and needs for corrective actions identified when a project is not progressing toward goals. By taking such an approach we can improve our ability to reliably restore wetlands while contributing to our understanding of the basic structure and function of ecosystems."

(Kentula, M.E. 2000. Perspectives on setting success criteria for wetland restoration. Ecological Engineering 15:199-209)

Quotable Quotes

"One type of reference that has not been used extensively is old projects. Comparisons of the characteristics of new projects with those of old projects built with similar objectives in mind can be used to answer questions such as: Have new design features resulted in more rapid development of ecological function that previous designs? Most important, considering the paucity of information on how projects develop over the long term, such comparisons can be used to determine whether new projects are developing as expected based on quantitative descriptions of old projects as they developed (Kentula et al. 1992). Success criteria for new projects can then be defined with consideration of past experience and with the objective of doing, at minimum, no worse and, ideally, better than (what) was done in the past."

(Kentula, M.E. 2000. Perspectives on setting success criteria for wetland restoration. Ecological Engineering 15:199-209

Kentula, M.E., R.P. Brooks, S.E. Gwin, C.C. Holland, A. Sherman, and J.C. Sifneos 1992. An approach to improving decision making in wetland restoration and creation. Island Press, Washington, D.C.)

Quotable Quotes

"Ultimately, while many older projects have had limited success in terms of replacing or repairing ecological functions, they have provided an important base of information that can be used to assure that future restoration projects make a positive contribution to the resource."

(Kentula, M.E. 2000. Perspectives on setting success criteria for wetland restoration. Ecological Engineering 15:199-209)

Quotable Quotes

"If established early in the project planning phase and implemented during the monitoring and management phases, **adaptive management** can become a powerful method to systematically assess and improve the performance of restored systems as well as contribute to the technology of restoration."

(Thom, R.M. 2000. Adaptive Management of coastal ecosystem restoration projects. Ecological Engineering 15:365-372)

Quotable Quotes

"Because **adaptive management** programs require some level of monitoring, they can potentially become expensive. Thom and Wellman (1996) found that monitoring costs averaged 13%, and ranged from 3% to 62% of the total cost of aquatic restoration projects."

(Thom, R.M. 2000. Adaptive Management of coastal ecosystem restoration projects. Ecological Engineering 15:365-372.

Thom, R.M., and K.F. Wellman 1996. Planning aquatic ecosystem restoration monitoring programs. Pacific Northwest National Laboratory, Richland Washington: final report prepared for US Army Corps of Engineers, Institute for Water Resources, Alexandria, VA, IWR Report 96-R-23.)

Quotable Quotes

"Agencies and the public should develop restoration projects integrated into region-wide restoration plans to guide project planners. Region-wide plans must determine regional goals for restoration and integrate current scientific knowledge into success criteria. Restoration projects should be monitored from inception to determine if appropriate engineering and planning were actually implemented at a site. Long-term success, relative to overall regional restoration goals, should be evaluated by a public agency responsible for administering the regional plan. A well-administered regional restoration program will continually integrate experience at individual sites with new scientific information in an iterative process producing more reliable and predictable restoration projects."

(Hackney, C.T. 2000. Restoration of coastal habitats: expectation and reality, Ecological Engineering 15:165-170)

Quotable Quotes

"Under **Adaptive Management**, the knowledge gained through monitoring of the project and social policies is translated into restoration policy and program redesign. Planners and managers can utilize the information from the monitoring programs in an effective way to ensure that project goals are met or that informed and objective decisions are made to address both ecological and societal needs.

(Thom, R.M. 2000. Adaptive Management of coastal ecosystem restoration projects. Ecological Engineering 15:365-372)