

Economic Valuation of Submerged Ecosystems for Policy

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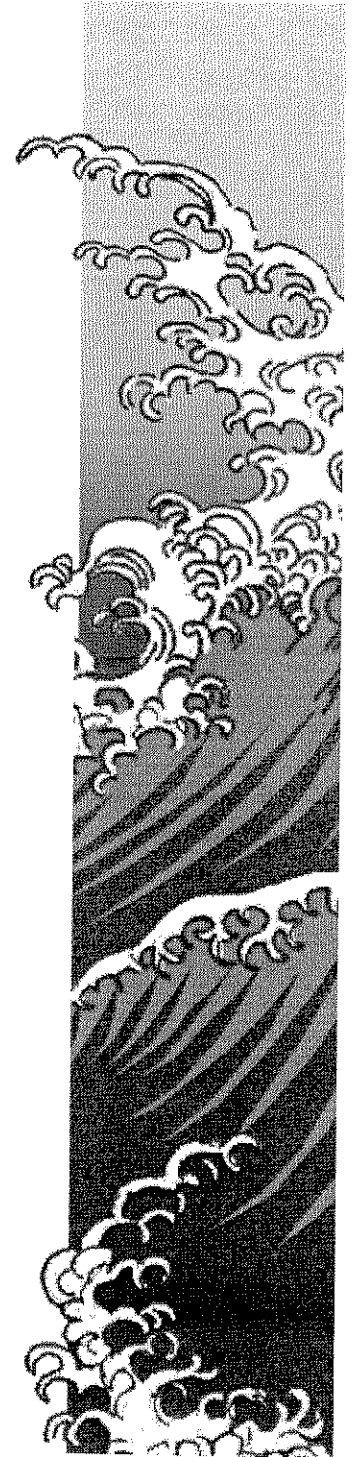
Trends in Wetlands Loss Hints at Need for Valuation

1986-1997 58,545 acres/year

1975-1985 254,770 acres/year

*1.8 acres to be mitigated for every
1 acre permitted*

*[http://www.nap.edu/catalog/10134.ht
ml](http://www.nap.edu/catalog/10134.html)*



Helpful Websites

Easement, Acquisition, Tax Examples
<http://www.coastalconservancy.ca.gov>

Offshore Valuation of Recreation
Channel Islands National Marine
Sanctuary

[http://www.cinms.nos.noaa.gov/MRWGsoc
ioec/panel.html](http://www.cinms.nos.noaa.gov/MRWGsoc
ioec/panel.html)



Above and Beyond Real Estate Values

*Value of Ecosystem Functions
and Goods*

*-use, option, bequest, existence
values*



Ecosystem Credits

- *Market value*
- *Site acquisition costs*
- *Planning and permitting costs*
- *Engineering design costs*
 - *Equipment costs*
 - *Cost of water, plants*
 - *Maintenance costs*
- *Taxes, insurance, finance charges*
 - *Adjustments for inflation*
- *Monitoring and reporting costs, etc.*



Replacement Cost

Costs of conventional water filtration plant for NYC: \$6-8 billion fixed cost plus \$300 million yearly

Versus

Costs of protection watershed ecosystem with filtration through riparian habitat: \$1 billion



Valuation Methods

Observed Behavior

Hypothetical

Market Price

Contingent Valuation

Appraisal

Bidding Game

Averting Expenditures *Contingent Ranking*

Travel Cost

Contingent Referenda

Hedonic Pricing

Factor Price

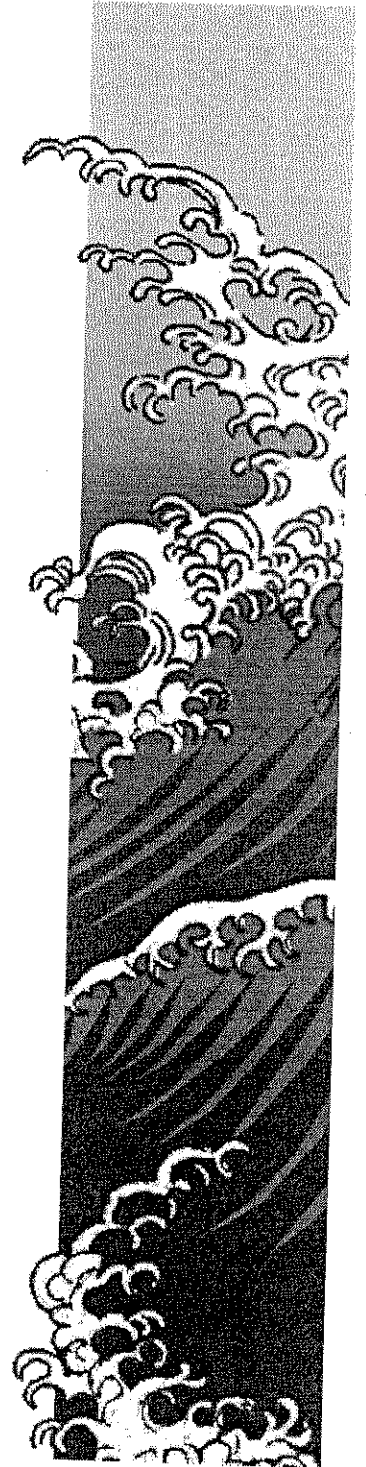
Replacement Cost



Hedonic Pricing

Price of land is tied to ecosystem amenities through distance to open space

Spring Island, S. Carolina
Central Park, NYC



Contingent Valuation

*Survey how much people will pay for
submerged habitat access*

*Value to prevent damage to habitat in
Prince William Sound*

\$31/household (Hanemann, 1994)



Factor Price

*Value of Estuary in oyster production
\$785/acre/year (1997 dollars)*



Travel Cost

*Value of travel and time to enjoy
submerged site*

Lake Nakuru National Park, Kenya

\$13.7 to 15.1 million

\$3.6 to 4.5 million residents

*Remaining value is from nonresidents
viewing wildlife*



Units of Measure

*Rather than Acres, indicators of
ecosystem health generate monetary
value*

Hydrogeomorphic Model

Habitat Evaluation Procedure

Wetlands Evaluation Technique

Red Cockaded Woodpeckers, FL



Averting Expenditures

*Value of flood damage prevention
costs in Dutch Estuary*

\$567/hectare/year (1994 dollars)



Transferable Development Rights

NJ Pineland Development Credits (PDCs). Landowners of marsh receive 1 PDC for every 39 acres.

Developers seeking to increase the standard density on land zoned for development are required to acquire 1 PDC for every 4 units of increase.



Wetlands Functions

Habitat for aquatic flora and fauna

Water purification/Pollution assimilation

Flood control/Erosion prevention

Groundwater recharge

Global carbon cycling

Preservation of genetic diversity

Recreational opportunities

Amenities

