

# THE POTENTIAL ECONOMIC BENEFITS OF RIPARIAN BUFFERS

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## INTRODUCTION

Opponents of environmental protections on private residential and commercial property, such as the requirement of riparian buffer zones, are often concerned that restrictions will lower property values. In fact, there is growing evidence to suggest that modest and evenly enforced environmental protections within an entire wetlands area can substantially enhance property values. Studies also suggest that environmental protections can boost state revenues by enhancing the desirability of communities and recreational areas, while limiting the unforeseen growth in state expenses that often accompanies expanded residential and commercial development in watershed areas.

The economic benefits of the ecological services provided by Connecticut's rivers and wetlands run in the tens of billions of dollars annually. Maintaining a minimum level of protection for these assets can help to ensure that the rapid expansion of residential and commercial development does not negate the benefits of economic growth.

## POTENTIAL ECONOMIC BENEFITS

Studies have demonstrated that riparian buffers are a relatively low cost<sup>1,2</sup>, easily enforceable<sup>3</sup> and effective means of delivering valuable ecological services - such as the prevention of diffuse source pollution, protection of water supplies, flood mitigation, and aesthetic enhancement of communities and recreation areas. The spread of residential and commercial land development is frequently accompanied by an increase in water pollution when fertilizers, sediment, chemicals and other contaminants are carried from lawns and pavement into neighboring wetlands by storm water runoff.<sup>4</sup> Numerous studies document the important role that riparian buffers can play in reducing diffuse source pollution that may otherwise result in eutrophication, increased toxicity, and loss of water clarity.<sup>5,6,7,8,6</sup> Studies have also demonstrated that protection is far more efficient than clean-up.<sup>9</sup>

The ecological services provided by Connecticut's rivers and wetlands are worth many billions of dollars annually. The natural protection that riparian buffers offer to the quality of these assets can safeguard and enhance the desirability of communities and recreational areas, protecting property values and promoting tourism.

### ***Recreational***

Clean water, abundant and diverse wildlife, healthy fish stocks, and scenic views are a few of the assets that riparian buffers protect. This natural capital leads to a steady stream of returns in the form of tourism and recreational income and related tax revenue. Both the volume and range of outdoor recreational activities has increased dramatically in the United States over the last few decades.<sup>10</sup> For example, expenditures associated with wildlife-watching increased by over 20% in the U.S. between 1995 and 2006, from \$37.7 billion to \$45.7 billion (in 2006 dollars).<sup>11</sup> In 2006, fishing, hunting and wildlife watching activities by Connecticut residents alone generated \$755 million in recreation related revenues in Connecticut.<sup>12</sup> Another \$9 billion was spent by tourists visiting the state, generating over 1 billion in state and local tax revenue, and employing 1 in 15 workers in the state.<sup>13</sup>

But Connecticut's recreational and tourism dollars are heavily reliant upon the maintenance of healthy ecosystems. For example, numerous studies emphasize the importance of preserving the natural habitat of fish - including shade trees, submerged grasses and other food sources - to maintaining healthy fish populations in spots popular among anglers.<sup>14,15,16</sup> Numerous studies have found that individuals express willingness to pay substantial sums to protect the regional environment.<sup>17,18</sup> One study in the 1990s found particularly high dollar values placed on improving water quality to a "swimmable" level.<sup>19,20</sup>

Loss of natural riparian buffers can lead to pollution of streams by sediment, nutrients, and other contaminants, destroying fish habitat and closing swimming areas.<sup>21</sup> The 1994 EPA National Water Quality Inventory Report to Congress identified 374 sites in 22 states where recreation was restricted due to poor water quality."<sup>22</sup> In a 2009 survey of recreational boaters on Candlewood Lake in Connecticut, over half of respondents stated

that poor water quality due to invasive species was “a major problem”<sup>23</sup>. And almost three quarters of boaters who owned lakefront property found it to be a major problem, indicating that they were the group most likely to benefit from riparian buffer zones designed to prevent such eutrophication.

Over the last two decades, an 18.2% increase in the land area covered by construction in Connecticut has been accompanied by a 14.5% decline in farmland, 6.5% decline in deciduous forest, 6.9% decline in area covered by water, and a 5.5% decline in forested wetland; trends that highlight the importance of safeguarding the remaining wetlands from environmental degradation.<sup>24</sup> In Connecticut, an extensive study of coastal areas suggests that landuse restrictions within a 100 ft wetland buffer zone has helped to reduce the loss of natural vegetation during residential and commercial land development.<sup>25</sup>

### *Aesthetic Value*

Historically, Connecticut’s great natural beauty and well-preserved historical villages have ensured it some of the most prized real estate in the world. Its very desirable communities have attracted a relatively high-skilled, high-income population that, in turn, has attracted a dynamic commercial sector. The desirability of communities is strongly influenced by the surrounding environment, and the health of neighboring wetland ecosystems plays a particularly important role. Reduced water clarity, algae blooms, and eutrophication have been shown to greatly diminish adjacent property values.<sup>26,27,28</sup> And in regions where water quality has been allowed to deteriorate substantially as a result of over-development, studies have documented dramatic declines in regional property values.<sup>29,30</sup>

Environmental restrictions on privately held land are often fought by those with short-term interests in the sale of local residential and commercial development, who fear that new restrictions will diminish market profitability. Though there is little evidence of diminished individual property values when all properties are similarly restricted, or regional economic loss<sup>31</sup>, studies do show that land use restrictions that improve water quality often lead to substantial increases in property values both on and near wetland

areas.<sup>32,33,34,35,36</sup>

By maintaining a minimum level of protection for rivers and wetlands, riparian buffers can also help to mitigate a number of unintended consequences of rapid residential and commercial development that can drain state budgets, such as increased flooding, declining water tables and increasing strain on public water systems, as well as the spread of invasive plant species. Failure to address these issues can negate many of the benefits of economic growth.

### ***Drinking Water***

Safe, dependable supplies of groundwater - for residential, agricultural, commercial and public uses - are crucial to a healthy economy. Among the many ecological services offered by riparian buffers is their ability to help protect and restore groundwater reserves. Public agencies spend large sums each year to obtain, treat and maintain water supplies.<sup>37,38</sup> The loss of ecological services provided by riparian buffers can increase these costs. Increased sedimentation leads to the need for dredging and more frequent repair and replacement of equipment.<sup>39,40</sup> Increased runoff of nutrients and other contaminants from lawns, fields, and pavement into wetlands increases the need to treat drinking water with chemical coagulants and disinfectants. And contaminants can also cause costly depreciation of commercial equipment. Expanding riparian buffers has the potential to limit these costs.<sup>41</sup>

### ***Flood Control***

By impeding and absorbing flood waters, riparian forest buffers reduce the damage caused by floods. And by reducing the sedimentation of rivers and streams, which fills streambeds and makes them more prone to overflowing, riparian buffers also reduce the frequency of flooding.<sup>42,43</sup> According to one study, reducing runoff by 10% within a watershed could reduce flood peaks with a 2 to 5 year return period by 25% to 50%.<sup>44</sup>

According to the NFIP, the value of flood losses in the U.S. between 1996 and 2005 totaled over \$2.4 billion.<sup>45,46</sup> Rapid land development and the loss of riparian buffers have

the potential to increase these costs.<sup>47</sup> Ironically, where new land development leads to increased flooding, it has the potential to drive down the value of existing housing stocks in flood prone areas.<sup>48</sup>

#### POLITICAL FEASIBILITY AND “WILLINGNESS TO PAY”

Numerous studies find that Americans express a willingness to pay substantial sums for programs that will improve water quality.<sup>49,50,51,52,53,54,55</sup> While such studies might overstate the true willingness to pay for ecological services, the notable consistency of such results indicate a very real concern over the availability and security of safe drinking water. One study that explored the difference between the hypothetical willingness to pay among survey participants and taxpayers’ actual willingness to pay for a riverfront improvement project, found that there was no statistically significant difference between the two.<sup>56</sup> Since the benefit/cost ratio to households of wetland restoration projects is often very high<sup>57</sup>, it is perfectly rational for residents to be willing, if not eager, to pay for such projects.

## Endnotes

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