

TABLE X-33.—LOWER AND UPPER BOUND ESTIMATES OF TOTAL WETLAND AND SAV RESTORATION REQUIRED TO OFFSET NORTH ATLANTIC IMPINGEMENT AND ENTRAINMENT

Habitat restoration category	Lower bound on required number of acres	Upper bound on required number of acres
Tidal wetland restoration	25,589	43,813
SAV restoration	151	1,205

These estimates are derived from abundance data for these species in wetland and SAV habitats. Abundance data were used because estimates of production rates in these habitats are not available for the species of interest. Individuals were counted within subsampling areas of the habitats (e.g., 100 square meters), and the resulting counts were scaled up to derive per acre density estimates by species. Usable data were available for three species for which impingement and entrainment data were also available that were found in wetlands (winter flounder, Atlantic silverside, and striped killifish) and for three species that were found in SAV (threespine stickleback, northern pipefish, and scup). The amount of wetlands acreage needed to restore impingement and entrainment losses ranged from 11–12 acres for killifish to 25,589–48,813 acres for winter flounder. While it is not known how many acres would be needed for the many other species found in wetlands, it appears from the available data that the acreage needed for winter flounder significantly overstates the acreage needed for other species, and restoring this many acres would lead to more than offsetting increases in these other species. For SAV, the acreage estimated ranged from 105–180 acres for threespine stickleback, to 1205 acres for scup. EPA requests comment on using abundance data for these analyses. EPA also

requests comment on using the species that require the maximum quantity of habitat to offset impingement and entrainment losses as the basis for estimating the total habitat required to offset regional losses. Finally, EPA requests comment on using estimates of fish production per acre as the basis for benefits transfer, given that respondents were likely not aware of the quantitative relationship between habitat and fish production when they provided valuation information.

b. Developing WTP Values for Fish Production Services Provided by Submerged Aquatic Vegetation and Wetlands for the North Atlantic Region

For the North Atlantic Region, EPA based the benefit transfer of both total and nonuse values for fish habitat provided by eelgrass and wetlands on a site-specific study of the Peconic Estuary, located on the East End of Long Island, New York (Johnston *et al.*, 2001a, Opaluch *et al.*, 1995, 1998; Mazzotta, 1996). For detail on the Peconic Estuary study used in this analysis see DCN's 5–1275, 5–1292, 5–1293, and 5–1284. Conducted in 1995, the study provides information for the Peconic Estuary Program's Comprehensive Conservation and Management Plan (see <http://www.savethepeconicbays.org/ccmp/>).

Both eelgrass and wetlands located in the Peconic Estuary support aquatic species that are found throughout the North Atlantic region and that are likely to be affected by impingement and entrainment (e.g., bay anchovy, Atlantic silverside, scup, summer flounder, winter flounder, windowpane flounder, weakfish, tautog, bay scallops, and hard clams).²⁵ The Peconic Estuary study thus provides values for eelgrass and wetlands that may be representative of habitat needed to produce many of the species affected by impingement and entrainment at power plants. EPA will further evaluate applicability of the habitat in the Peconic study to other

study regions such as the mid-Atlantic. EPA will also evaluate other aquatic habitat valuation studies for their applicability to the analysis of benefits of the section 316(b) rule in other regions.

EPA re-estimated the Peconic model with separate coefficients for users and nonusers of fishery resources in order to separate out nonuse values. The Agency defined users as those who stated that they either fish or shellfish. These individuals have both nonuse and indirect use values from the fish habitat services of eelgrass and wetlands. EPA estimated nonuse values only for those who do not fish or shellfish.²⁶ Table X-34 presents the Peconic model results. For eelgrass, the value for nonusers is 77.7 percent of the total value for users. For wetlands, the value for nonusers is 94.4 percent of the total value for users. Nonuse values, defined here as total values for nonusers of the fishery resources, represent a large portion of the total value estimated in the study. Nonusers assigned similar values to both types of habitat, while users assigned a slightly higher value to eelgrass, perhaps because it was explicitly identified on the survey as fish and shellfish habitat. It is difficult to determine ex post why the values for eelgrass and wetlands are similar for nonusers. However, the fact that nonusers assigned similar values to both types of habitat may indicate that they did not significantly differentiate the two habitat types on dimensions affecting valuation or, alternatively, they differentiated among habitat types, but assigned similar values. Since SAV was explicitly identified as fish and shellfish habitat and wetlands was not, this may mean that fish and shellfish services were not a significant attribute affecting respondents' valuation, or, alternatively that they were aware that wetlands also provide habitat for fish and shellfish based on knowledge external to the survey.

TABLE X-34.—ESTIMATED WTP VALUES PER HOUSEHOLD FROM THE PECONIC STUDY (2002\$)^a

	Wetlands ^b		Eelgrass (SAV)	
	\$/HH/Acre/Year ^c	Nonuse value %	\$/HH/Acre/Year ^c	Nonuse value %
All Residents	0.056	95.80	0.063	82.40
Users	0.057	94.40	0.067	77.70
Nonusers ^d	0.054	100.0	0.052	100.0

^a EPA made dollar value adjustments using the Consumer Price Index for all urban consumers for the first half of 2002.

²⁵ Further detail on fish SAV in the North and mid-Atlantic can be found in Wyda, *et al.*, 2002
²⁶ The response of fishes to submerged aquatic vegetation complexity in two ecoregions of the Mid-

Atlantic Bight: Buzzards Bay and Chesapeake Bay" (see DCN 5–1318).

²⁶ Note that this is not strictly true for wetlands, because other services exist that allow for use

values such as birdwatching. The value of wetlands is adjusted to reflect fish production services only in the section on wetlands below.