

Mid-Atlantic Sportfishing in 1994” provided in DCN 5–1271.

To estimate per trip welfare losses to recreational anglers from impingement and entrainment in the North Atlantic region, the Agency combined the Hicks’ model coefficients with the estimated impingement and entrainment losses at cooling water intake structures located in the North Atlantic and NMFS data on recreational landings. The Hicks’ model includes three fishing modes—boat, shore, and charter boat—and five species groups—big game, small game, flatfish, bottom fish, and “no target catch”. The “no target catch” group includes all species caught by anglers not targeting any specific fish species.

For details on species groupings, see Table 1.3 in the “The Economic value of New England and Mid-Atlantic Sportfishing in 1994” report provided in DCN 5–1271. EPA used Hicks’ definition of species groups to estimate changes in the average historical catch rate from eliminating impingement and entrainment.

Table X–10 shows the total average recreational landings for each species group, the number of fish impinged and entrained, and the estimated percent change in recreational landings if impingement and entrainment effects are eliminated. Eliminating impingement and entrainment would increase flatfish catch rates by 12.5%;

small game catch rates by 0.01%; bottom fish catch rates by 1.05%; and no target catch rates by 1.45%. Table X–10 also shows the reductions in impingement and entrainment losses that would result from installation of the preferred option at each facility in the North Atlantic region, as well as the resulting increases in catch rates. Reductions in baseline impingement and entrainment losses due to the preferred option will result in a 3.64% increase in catch rates for flounders; a 0.23% increase in bottom fish catch rate; and a 0.4% increase in catch rate for no target anglers.

TABLE X–10.—ESTIMATED CHANGE IN THE TOTAL RECREATIONAL CATCH FOR NORTH ATLANTIC UNDER THE BASELINE AND POST-COMPLIANCE SCENARIOS

Species	Avg. total catch 1997–2001	Baseline		Preferred option	
		Total recreational losses from impingement and entrainment	Impingement and entrainment as % of total catch	Change in recreational losses from reduced impingement and entrainment	Reduced impingement and entrainment as % of total catch
Flatfish	2,525,530	315,703	12.50	91,995	3.64
Small Game	15,678,352	1,020	0.01	105	0.00
Bottom Fish	8,869,064	93,111	1.05	20,535	0.23
No Target Catch	28,280,214	409,960	1.45	112,652	0.40

Table X–11 presents the willingness to pay (WTP) values for anglers, regardless of fishing mode, for catching an additional fish per trip. Table X–11 also presents the estimated per trip welfare losses from the baseline impingement and entrainment levels at cooling water intake structures in the North Atlantic region, and the estimated welfare gain from the post-compliance

impingement and entrainment reduction. The estimated per trip welfare losses from baseline impingement and entrainment at the cooling water intake structures are \$0.34, \$0.02, and \$0.02 for flatfish, bottom fish, and no target catch, respectively (all in 2002\$). Per trip welfare gains from the preferred option are \$0.10, \$0.005, and \$0.004 for

flatfish, bottom fish, and no target catch, respectively (all in 2002\$). As shown in Table X–11, the greatest welfare gain from reducing impingement and entrainment losses at cooling water intake structures in the North Atlantic region results from improved opportunity for catching flatfish (*i.e.*, flounders).

TABLE X—11.—PER TRIP WELFARE GAIN FROM VARIOUS IMPROVEMENTS IN FISHING QUALITY AT ALL SITES IN NORTH ATLANTIC (2002\$)

Species group	All Fishing Modes/All Anglers		
	Eliminating baseline impingement and entrainment losses	Reducing impingement and entrainment under the preferred option	+1 Fish
Big Game	NA	NA	5.90
Small Game	\$0.0003	\$0.00003	2.53
Flatfish	\$0.34	\$0.10	3.57
Bottom Fish	\$0.02	\$0.005	1.06
No Target Catch	\$0.02	\$0.004	1.66

EPA combined these estimates of per trip welfare change with fishing participation estimates from NMFS to estimate the annual value to recreational

anglers of improved catch rates resulting from post-compliance reductions in impingement and entrainment at cooling water intake structures in the

North Atlantic. Table X–12 provides the total number of angler days in the North Atlantic.GPOTABLE