

Table 5.3.2-6						
Summary of Estimated Impacts from Cable Jet Plow Entrainment to Fish and Invertebrate Eggs and Larvae and Planktonic Food Sources						
Marine Resource	Representative Taxon	Life Stage	Estimated Density During Anticipated Period of Jet Plow Operation (individuals/ft ³)		Estimated Impact (individuals entrained)**	
			Nearshore*	Offshore*	Nearshore*	Offshore*
Finfish	Summer Flounder-Windowpane ^c	Eggs	<0.01		4,000	38,000
	Cunner-Tautog-Yellowtail Flounder ^c		0.37		1.8 million	16.9 million
	Scup-Weakfish-Silver Hake ^c		0.23		1.1 million	10.5 million
	Anchovies ^c		0.10		500,000	4.7 million
	Atlantic Menhaden ^c		0.06		300,000	2.8 million
	Fourbeard Rockling-Red Hake-Atlantic Butterfish ^c		<0.01		24,000	230,000
	Windowpane-Fourspot Flounder-Black Sea Bass ^c		0.02		100,000	9.7 million
	Atlantic Mackerel-Cusk ^c		<0.01		12,000	110,000
	Northern Kingfish-Hogchoker ^c		<0.01		8,000	75,000
	Searobins ^c		0.03		130,000	1.2 million
	Winter Flounder	Larvae	Low to very low (<0.001)	Very low	2,600	Very low densities of winter flounder larvae expected. Therefore the estimated impact is negligible.
	Summer Flounder		Very low		Minor to negligible	Minor to negligible
	Windowpane		<0.001		2,000	19,000
Tautog	0.016		79,000	750,000		
Cunner	0.087		420,000	3.9 million		
Scup	0.008		36,000	340,000		
Anchovies	0.014		66,000	620,000		
Atlantic Menhaden	0.002		8,600	81,000		

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			Nearshore*	Offshore*	Nearshore*	Offshore*
	Atlantic Butterfish		<0.001		660	6,200
	Black Sea Bass		<0.001		660	6,200
	Atlantic Mackerel		Very low		Minor to negligible	Minor to negligible
Zooplankton	NA	All	934±110 ^d		An estimated 4.0 to 5.0 billion zooplankton would be entrained during the entirety of the jet plow operations in Massachusetts waters.	An estimated 37.5 to 42.5 billion zooplankton would be entrained during the entirety of the jet plow operations.

*Nearshore is here taken to mean Massachusetts waters while Offshore refers to Federal waters
 **Where density data were available, mortality was estimated using the following assumptions:
 1. Total jet plow distance for cable installation was estimated as 378,000 feet (71.6 miles) for federal waters and 40,000 (7.6 miles) for state waters.
 2. Pumping rate of 4,500 gallons per minute (equipment maximum) assumed for the duration of water withdrawals associated with jet plow operation.
 3. Average advance rate estimated at 300 feet per hour.
 4. Overall volume of water withdrawals associated with jet plow operation (over the duration of the inner-array and transmission cable installation) estimated to be 376 million gallons.
 5. 100% mortality assumed for all entrained organisms.
 a. Bigelow and Schroeder, 1953
 b. Buckley, 1989
 c. Estimates for this species based on data for Buzzards Bay presented in Collings et al., 1981. Species that could not reliably be distinguished from each other during the egg life stage are grouped together.
 d. Based on data for Massachusetts Bay presented in Oviatt et al., 2007