

## PART III: IMPLEMENTATION

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The following Implementation Schedule outlines actions and estimated costs for the recovery program in the U.S. portion of the piping plover's Atlantic Coast range over the next three years, beginning in 1997. Responsible organizations and costs for the Canadian portion of the range are not included, since these are covered under the Canadian Piping Plover Recovery Plan (CWS 1989), now under revision.

The U.S. Fish and Wildlife Service believes that projected protection costs could be substantially reduced by selecting protection strategies that are more restrictive of other beach users. For example, 1993 protection costs (average cost per pair) were considerably higher at National Park Service units than those at national wildlife refuges; this is partially due to the costs associated with protecting plovers on NPS beaches that receive heavy public use, whereas refuge beaches are generally closed to public use during the breeding season. While the USFWS believes that it is neither feasible nor desirable to completely eliminate beach recreation in most plover habitat, it also recognizes that management strategies that protect plovers on beaches where public use is also maintained require a continuing commitment of person-power, and are inherently expensive.

The Implementation Schedule lists and ranks tasks that should be undertaken within the next three years. This schedule will be reviewed annually until the recovery objective is met, and priorities and tasks will be subject to revision. Tasks are presented in order of priority.

***Key to Implementation Schedule Column 1:***

Task priorities are set according to the following standards:

- Priority 1: Those actions that must be taken to prevent extinction or to prevent the species from declining irreversibly in the foreseeable future.
- Priority 2: Those actions that must be taken to prevent a significant decline in species population, or some other significant impact short of extinction.
- Priority 3: All other actions necessary to provide for full recovery of the species.

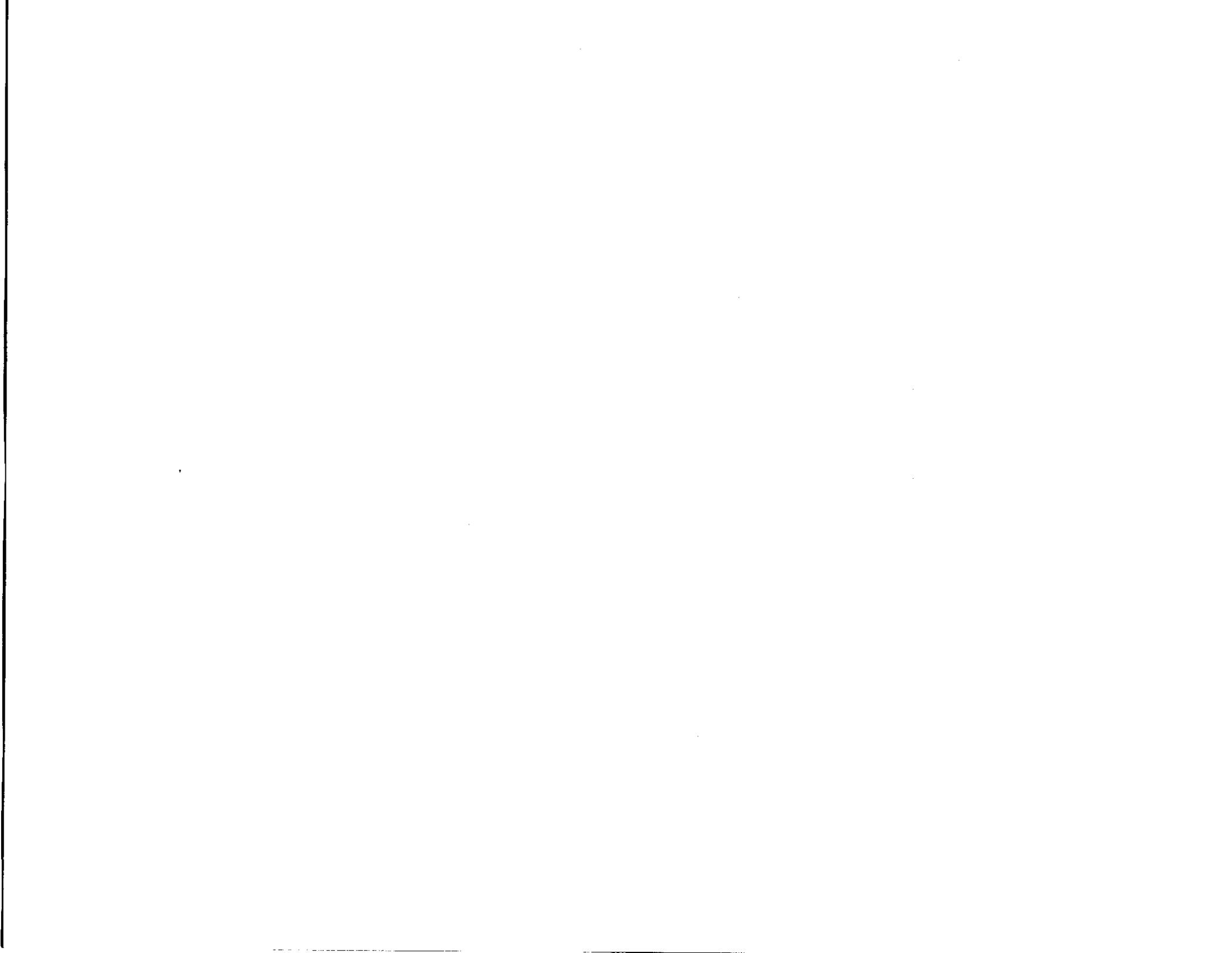
***Key to Agency Designations in Column 5:***

- USFWS - U.S. Fish and Wildlife Service
- R5 - USFWS Region 5 (Maine to Virginia)
- R4 - USFWS Region 4 (North Carolina to Louisiana)
- R2 - USFWS Region 2 (Texas)
- ES - USFWS Division of Ecological Services (includes Endangered Species and Contaminants)
- RW - USFWS Division of Refuges and Wildlife (includes Realty)
- LE - USFWS Division of Law Enforcement
- PA - USFWS Public Affairs
- ADC - U.S. Department of Agriculture, Animal Damage Control
- Corps - U.S. Army Corps of Engineers
- FEMA - Federal Emergency Management Agency
- USCG - U.S. Coast Guard
- NPS - National Park Service
- SWA - State Wildlife Management Agencies
- SCRA - State Coastal Regulatory Agencies
- LMAO - Land Management Agencies and Organizations and other Cooperators. This includes Federal, State, and local land management agencies, private organizations and individuals that own and manage piping plover breeding and wintering habitat, and private conservation groups that provide on-site protection of lands owned by others. The USFWS/RW and NPS are not included in this group; however, the Corps and USCG, in their capacity as owners of piping plover breeding or wintering habitat, are included. A partial listing of agencies and organizations in the LMOA group includes: National Aeronautics and Space Administration, U.S. Air Force, State park and recreation agencies, municipal and county governments, TNC, The Trustees of Reservations, National Audubon Society, Massachusetts Audubon Society, Maine Audubon Society, and Connecticut Audubon Society.
- RsCh - Research Institutions

**IMPLEMENTATION SCHEDULE**  
Atlantic Coast Piping Plover Revised Recovery Plan

April 1996

Priority	Task Description	Number	Task Duration	Responsible Organization		Cost Estimates (\$000)			Comments
				USFWS	Other	FY1	FY2	FY3	
1	NY/NJ and Southern Units: Monitor plover breeding activities at nesting sites to identify limiting factors.	1.12	annual	R5 ES,RW R4 ES,RW	SWA LMAO NPS	Included in tasks 1.3 and 1.4			
1	Discourage at current or potential breeding sites: new structures or other developments; interference with natural inlet processes; beach stabilization projects.	1.21 1.22 1.23	ongoing	R5 ES R4 ES	Corps FEMA SWA SCRA NPS LMAO	contingent on numbers and types of projects proposed			
1	NY/NJ and Southern Units: Reduce disturbance of breeding plovers from humans and pets.	1.3	annual	R5 ES,RW,LE R4 ES,RW,LE	SWA LMAO NPS	1150	1200	1250	Includes costs for task 1.12 in NY/NJ and Southern Units. Costs could be reduced by adopting less labor-intensive management practices, but greater impacts on beach users would be incurred.
1	NY/NJ and Southern Units: Reduce predation.	1.4	annual	R5 ES,RW R4 ES,RW	ADC NPS SWA LMAO				
1	Protect breeding plovers and habitat from oil and chemical spills.	1.5	as needed	R5 ES,RW R4 ES,RW	USCG SWA SCRA	contingent on number and magnitude of spills			
1	Protect wintering habitat from shoreline stabilization, navigation projects, and development.	2.21	on-going	R4 ES R2 ES	Corps FEMA NPS SWA SCRA	contingent on numbers and types of projects proposed			
1	Protect wintering plovers and habitat from oil and chemical spills.	2.23	as needed	R4 ES R2 ES	USCG SWA SCRA	contingent on number and magnitude of spills			
2	Monitor plover abundance, distribution and productivity in each recovery unit.	1.11	annual	R5 ES R4 ES	SWA	10	10	10	Cost of data compilation only; data collection by site reflected in tasks 1.3 and 1.4.



Priority	Task Description	Number	Task Duration	Responsible Organization		Cost Estimates (\$000)			Comments
				USFWS	Other	FY1	FY2	FY3	
2	New England: Monitor plover breeding activities at nesting sites to identify limiting factors.	1.12	annual	R5 ES,RW	SWA NPS LMAO	included in tasks 1.3 and 1.4			
2	Enhance nesting and feeding habitat, especially where existing stabilization projects have disrupted natural coastal processes.	1.24	ongoing	R5 ES,RW R4 ES,RW	Corps NPS SWA LMOA SCRA	25	25	25	
2	New England: Reduce disturbance of breeding plovers from humans and pets.	1.3	annual	R5 ES,RW,LE	SWA NPS LMAO	700	725	750	Includes cost for task 1.12 in New England. Costs could be reduced by adopting less labor-intensive management practices, but greater impacts on beach users would be incurred.
2	New England: Reduce predation.	1.4	annual	R5 ES,RW	ADC NPS SWA LMAO				
2	Monitor abundance and distribution of wintering plovers at known sites.	2.11	annual	R4 ES,RW R2 ES,RW	SWA NPS LMAO	30	30	30	Costs are for NC, SC, GA, and FL.
2	Determine additional wintering sites.	2.12	ongoing	R4 ES R2 ES	SWA LMAO	20	20	20	
2	Identify limiting factors at specific wintering sites.	2.13	ongoing	R4 ES,RW R2 ES,RW	SWA NPS LMAO	25	25	25	
2	Protect wintering plovers from disturbance.	2.22	annual	R4 ES,RW,LE R2 ES,RW,LE	SWA NPS LMAO	40	40	40	Most costs will be incurred in FL.
2	Apprise agencies of threats to wintering piping plovers and habitats.	2.24	ongoing	R4 ES R2 ES	SWA	10	10	10	
2	Update lists of essential wintering habitat.	2.25	ongoing	R4 ES R2 ES	SWA	10	2	2	\$10K in FY1 is to compile updates from 1996 International Census.



Priority	Task Description	Number	Task Duration	Responsible Organization		Cost Estimates (\$000)			Comments
				USFWS	Other	FY1	FY2	FY3	
2	Investigate piping plover wintering ecology.	3.1	4 years	R4 ES R2 ES	SWA NPS Rsch	75	75	75	Plus \$75K in FY4.
2	Compare foraging resources along Atlantic Coast breeding habitat.	3.21	3 years	R5 ES R4 ES	SWA NPS Rsch	85	85	85	
2	Determine moisture-related requirements of breeding plovers and chicks.	3.22	3 years	R5 ES R4 ES	SWA NPS Rsch	50	50	50	
2	Evaluate impacts of artificial inlet closure and other beach stabilization projects on habitat suitability.	3.23	5 years	R5 ES R4 ES	Corps NPS SCRA Rsch	75	75	75	Plus \$75K in FY4 and FY5.
2	Monitor levels of contaminants.	3.3	Ongoing	R5 ES	SWA	20	20	2	
2	Inform and educate the public.	4.	on-going	R5 ES,PA R4 ES,PA	SWA	60	60	60	
3	Provide long-term protection for breeding plovers and habitat.	1.6	7 years	R5 ES,Realty R4 ES,Realty	SWA NPS LMOA	TBD*			
3	Provide long-term protection for wintering plovers and habitat.	2.26	7 years	R4 ES,Realty R2 ES,Realty	SWA NPS LMOA	TBD			
3	Identify important migration habitat.	2.31	ongoing	R4 ES R5 ES	SWA	15	15	15	
3	Identify and mitigate adverse effects on migration habitat.	2.32	TBD	R4 ES R5 ES	SWA	TBD			
3	Develop conditioned taste aversion techniques.	3.41	3 years	R5 ES,RW	ADC NPS SWA	TBD			
3	Test artificial coyote territories.	3.42	2 years	R5 ES	ADC NPS	15	15		



Priority	Task Description	Number	Task Duration	Responsible Organization		Cost Estimates (\$000)			Comments
				USFWS	Other	FY1	FY2	FY3	
3	Evaluate threats from ghost crabs.	3.43	TBD	R5 ES,RW R4 ES,RW	Rsch	TBD			
3	Develop and test electric fences.	3.44	TBD	R5 ES,RW	ADC	TBD			
3	Analyze population trends and productivity to determine survival rates.	3.5	Every 4 years	R5 ES	Rsch		7		Repeat in FY 6.
3	Determine temporal distribution of mortality.	3.6	TBD	R5 ES	Rsch	TBD			
3	Develop a metapopulation model to estimate extinction probability.	3.7	1 year	R5 ES	Rsch	10			
3	Estimate effective population size.	3.8	1 year	R5 ES	Rsch		10		
3	Develop safe plover marking techniques.	3.9	TBD	R5 ES	Rsch	TBD			
3	Review progress and revise recovery efforts	5.	annual	R5 ES	SWA	3	3	3	

\* To be determined

