

AMERICAN PEREGRINE FALCON PROJECT



BACKGROUND The scientific community widely accepts that exposure to environmental contaminants was the single factor that nearly caused the extirpation of the peregrine falcon (*Falco peregrinus*) from North America. It was only after restrictions were placed on the use of persistent organochlorine compounds in the United States and Canada that this species and other predatory birds began to recover. Local and regional data document the presence and effects of persistent chemical compounds in North American peregrine falcons. Many studies have documented the relationship between DDT concentrations and eggshell thinning, and exposure of this species to DDT and other pesticides in wintering areas may pose a risk long after banning these pesticides in North America. Recent regional research, including a 20-year monitoring effort in Alaska, suggests that mercury is currently at levels in the peregrine falcon that can affect reproduction, and may be increasing over time. In Texas, mercury, selenium and perhaps DDT may be contributing to low productivity of this species in the Big Bend area. The continuous introduction of anthropogenic chemicals to the environment far outpaces research on their effects on wildlife. Peregrine falcons, as predators, remain vulnerable to persistent environmental contaminants, and despite the role of contaminants in the decline of this species, there has been no systematic nationwide effort to monitor exposure of these birds to chemical threats.

PURPOSE Through an agreement initiated in 2003 between the US Fish and Wildlife Service (USFWS), and the National Institute of Standards and Technology (NIST), NIST is providing support to the *Monitoring Plan for the American Peregrine Falcon* by cryogenically banking egg and feather specimens for future chemical analyses.

DESCRIPTION To monitor loads of past, current, or emerging contaminants of concern in peregrine falcons, egg and feather specimens are collected in conjunction with ongoing population monitoring efforts. Eggs are collected opportunistically during nest visits as unhatched “addled” eggs during the nestling stage. If declines in breeding population size or productivity indicate the need for greater contaminants sampling, it may be necessary to consider using fresh eggs to ensure an adequate sample size in some regions. Nestling feathers are also collected for future metals analyses. Protocols for collecting and banking eggs were designed to: (1) provide sufficient material for multiple analyses, (2) minimize the possibility of sample change and/or loss during storage, (3) ensure sample integrity by minimizing potential contamination during collecting and processing, (4) protect long-term sample stability by using cryogenic techniques, and (5) keep and maintain records of sample histories. Egg and feather specimens are collected under the direction of the USFWS Regional Coordinators. After separation of egg contents from eggshells, the frozen egg contents and feather specimens are sent to NIST in Charleston, South Carolina, for cryogenic banking and selected chemical analyses.

Specimen banking is provided by NIST at the Marine Environmental Specimen Bank (ESB) in the Hollings Marine Laboratory, Charleston, South Carolina. Specimens are stored in permanently labeled, cataloged Teflon containers in nitrogen vapor freezers at -150°C . Specimens selected for analysis are cryogenically homogenized, divided into aliquots, and those portions not designated for analysis are returned to cryogenic storage for future retrospective research.

For current inventory of banked specimens, [click here](#)
For Monitoring Plan, [click here](#)

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Inventory of tissues banked in the American Peregrin Falcon Project (Sept. 1, 2005)



By Region

	<u>Egg</u>	<u>Feather</u>	
Region 1-Pacific		5	
Region 3-Midwest	7	41	
Region 4-SE		3	
Region 7-Alaska	2	10	
TOTAL	9	59	68

Egg Contents By Year

<u>EGG</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>
Region 1-Pacific			
Region 3-Midwest		7	
Region 4-SE			
Region 7-Alaska	2		
TOTAL	2	7	9

Feathers By Year

<u>FEATHER</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>
Region 1-Pacific		5	
Region 3-Midwest		15	26
Region 4-SE		3	
Region 7-Alaska	7	3	
TOTAL	7	26	26