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Peregrine Falcon Research and Management Program in New Jersey, 2009

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Photo by K. Clark, 2009, at the Union County Court House in Elizabeth.
Wearing leg band G/*S, this female fledged from the Jersey City nest in 2003.

Program Objective: *To maintain, monitor and protect the Peregrine Falcon (*Falco peregrinus anatum*) population in New Jersey.*

Project Summary:

In 2009 the New Jersey peregrine falcon population increased to 24 known pairs. The increase was driven by bridges that were newly occupied or newly discovered. The peregrines on the Walt Whitman Bridge moved back into NJ from PA, and peregrines at two north Jersey sites (Rt. 3/Hackensack and the Newark Bay Bridge) were found mid-season with young. One site on the coast (Margate) was not occupied this year, but one new building site was discovered in Woodbridge. Four occupied territories were documented in cliff habitats.

Statewide, 14 pairs nested on towers and buildings, six on NJ bridges, and four on cliffs. Of 14 pairs on coastal structures and buildings, 11 nested successfully, producing 27 young for a rate of 1.93 young per active nest on towers and buildings. This is close to the average of 1.80 recorded since 1986 when the population stabilized. New Jersey monitored four pairs on bridges spanning the NJ-PA border. Pairs on the Betsy Ross and Walt Whitman bridges raised three and two young, respectively; pairs at Burlington-Bristol and Tacony-Palmyra bridges produced three and one young, respectively. Nests were newly discovered on two bridges in northern NJ: at the Route 3 Bridge over the Hackensack, two young were observed when they were about three weeks old. A railroad bridge over Newark Bay hosted peregrines that successfully fledged at least one young, observed in June. Other bridges may have been occupied in 2009, but the program lacked monitors in northern NJ to document all possible sites.

The peregrines on the natural cliff habitat increased back to four documented pairs, similar to recent years. Only one territory, furthest south on the cliffs, remained unoccupied; we suspect this pair now nests on the George Washington Bridge. Despite regular monitoring, no successful nesting was observed at the four nest sites. Unlike previous years, there were no major easterly or northeasterly storms that would account for this complete failure at the cliffs. As noted in previous reports, the north-south orientation of the cliffs makes the cliff population vulnerable to easterly storms, which are damaging to peregrines on eggs or young nestlings.

We donated five peregrine nestlings to West Virginia where they were released at a mountain hack site at the New River Gorge near Beckley. This has already shown success: NJ peregrines from previous releases have been sighted in WV and VA mountains, advancing the goal of reestablishing peregrines in the historic Appalachian Mountain range.

We banded all but four of the 39 young produced at 17 nests, using both a federal band and a bicolor band with an alpha-numeric code. One young fledged before banding, and three young on two bridges could not be accessed for banding.

We collected five addled eggs from three sites for future analysis. The study of contaminants in mid-Atlantic eggs was published in the journal *Environmental Contamination and Toxicology* (Clark et al. 2009). Coastal-NJ eggs were of special concern with regard to elevated levels of PCBs and DDT compounds, and warrant continued study.

In 2009 we continued to use remote, motion-activated cameras to photograph peregrines at nests. Using this method we were able to read the legbands on 20 breeding adults at ten nest sites. An additional five birds were identified using optics. The additional information that these identifications provide is valuable for relating peregrine origin and age to nest success, site fidelity, and turnover rate in the population.

Background: The decline of the peregrine falcon in the eastern U.S. has been linked to persistent organochlorine pesticide contamination. The eastern population plunged from an estimated 350 active sites in the 1930's and 1940's to no active breeding birds in 1964 or 1975. Recovery work began in 1975 after the U.S. ban on DDT. The NJ Division of Fish and Wildlife and the Peregrine Fund first hacked falcons in 1975 at Sedge Islands Wildlife Management Area in Barnegat Bay, and expanded to several more sites until pairs established territories. Wild nesting first occurred at Forsythe National Wildlife Refuge in 1980 and expanded slowly until 1993, when the population stabilized. In New Jersey, one recovery goal is *consistent, successful nesting by eight to ten pairs*. While there have been 8-10 pairs successful since 1999 (disregarding the variable bridge sites), we also need to attain population stability in historic and protected nest sites. The reestablishment of peregrines in the historic Palisades cliffs in 2003 was the beginning of a more complete recovery, but nest success at the cliffs has been erratic. We also remain concerned about the effects of persistent organochlorine contaminants on the population. New Jersey coastal peregrines continue to have some of the heaviest loads of DDE and mercury (Clark et al. 2009). Our work to track life history and nest success, along with contaminant exposure, will help identify effects on the population. Annual monitoring includes tracking nests, banding young, and improving conditions at nest sites to enhance productivity.

Results and Discussion

There were 24 occupied sites checked during the nesting season (Table 1), all of which were known or suspected to be active (with eggs). Fourteen pairs on towers and buildings continued

to be the core of the nesting population, producing 25 young, for a productivity rate of 1.79 young per active nest. Six pairs on bridges produced approximately 12 young, for a rate of 2.00 young/active nest. Some previously occupied bridges (e.g., Trenton) were not tracked. Four nest territories were occupied at the natural cliff habitat in northeastern NJ, which is a return to 2007 level, but none of the four nesting pairs were known to produce any young this year.

All but four of the 39 young produced were banded with a black-anodized federal band and a black/green bicolor auxiliary band for future identification (Table 2).

The nest atop 101 Hudson Street in Jersey City was rejuvenated this season with a new nest box (angled to avoid direct northeast storms) and a new outside camera view displayed on the webcam. The pair began incubation late, on April 20, but was successful in raising three young. Unfortunately, one falcon died at fledging; another one was picked up uninjured and successfully released at the roof. Volunteer peregrine watchers documented the two fledglings for six weeks after fledging, during which time the young learned to fly and hunt with their parents in the skies above Jersey City. Their observations were documented in Nestbox News online (http://www.njfishandwildlife.com/peregrinecam/jcp-2009nestnews.htm).

For a fourth year, we donated peregrine nestlings to the New River Gorge hack site in West Virginia. A total of five young (two from a building and three from bridges) were delivered to and hacked at the New River Gorge hack site. Information on the hack site can be found at: http://www.nps.gov/neri/naturescience/peregrine.htm. Moving young from the coastal population, where production is well above the minimum needed for population stability, supports the recovery of the peregrine in the entirety of its range in the region, and specifically the southern Appalachian mountains where peregrine nesting is still lacking.

Recoveries

We re-sighted 20 breeding birds using a remote camera, and eight more using optics, at 16 sites. Of 28 birds re-sighted as nesting adults in NJ, 23 had been observed in 2008. Of the five birds observed for the first time, two were at sites where no birds had been identified before. Thus we can be sure there were three new birds in 13 established pairs, representing a low 11% turnover. Perhaps this makes up for the high 29% turnover rate we saw in 2008. New breeding birds were recent fledges from Stone Harbor, Dividing Creek, and out of state (MD). Three newly-sighted birds (previously undocumented or at new sites) originated from New York, two nesting in northern NJ and one on the lower Delaware River. Our documentation of six years of adult identifications will be more fully explored in the coming year.

An interesting ID was at one of the cliff nests: The female that had nested there for several years was observed early in the season but the nest failed. Observations in late May and June revealed a new female (band number 47/V [b/g]) had paired with the tiercel. The new bird, fledged about 50 miles north at Newburgh, NY in 2007, is likely to be nesting here in 2010.

- The female with *P/*G (black/*red*) band, which fledged from coastal Virginia, continued to nest at the Atlantic City Hilton (since 2002). Strangely enough, a different falcon wearing *P/*G, (except in black/*green*) was found dead in Atlantic City on 2/17/09, after having been grounded for possibly weeks. A post-mortem exam suggested the bird had had West Nile Virus. She had originated in New York in 1995, band number 1807-24460. How unusual that birds with the same alpha-numeric bands, from NY and VA, ended up in Atlantic City.
- A male peregrine (2206-75749) that had been banded in Stone Harbor in 2007 was recaptured at a banding station in October 2007, in Assateague, Maryland. This same bird was found nesting at the Stone Harbor nest in 2009.
- A female peregrine (1807-37477) that had been banded at Egg Island in 2002 was killed by an airplane collision in Fort Lauderdale, Florida, on 3/2/09. There were no interim resightings, so it is unknown whether she resided in Florida or elsewhere.
- A male peregrine (2206-24693) was found injured in Swedesboro, Gloucester County, on 11/15/08, and treated at Tri-State Bird Rescue and Research. The bird had extensive injuries and had to be euthanized. He had been banded as a nestling in PA in 2003.
- A female peregrine (1807-02758) was found dead near Harrah's Casino in Atlantic City on 4/27/09, having hit a window. This bird had been banded in Virginia in 2007.
- A peregrine (2206-25988) was found in a yard in West Milford, NJ, on 3/27/09, dead of unknown cause. This bird had been banded in New Hampshire in 1995. It may have been wintering or migrating through NJ.
- A female peregrine (A/01 [b/g]), banded in Margate in 2008, was photographed on 8/4/09 near a beach in West Haven, CT. The bird appeared to be in good condition.

Conclusions: While the peregrine population increased slightly in 2009, nest success and productivity were lower than normal. Nest success was slightly low at 61% and 1.50 young/active site of non-bridge sites (towers, buildings and cliffs); nest success was closer to normal at 79% and 1.9 young/active site when the cliffs were excluded. Across all sites (including bridges), 24 sites (17 successful) fledged 39 young, for a rate of 1.6 young/active site. The decline in nest success and productivity was due in part to losses of young hatchlings to

parasitic flies at some coastal sites. In addition, the lack of nest success at the four cliff territories was disheartening, and we could not attribute those failures to specific weather events that caused past losses.

We plan to continue the investigation of contaminants in unhatched, salvaged eggs, as well as the close monitoring of nesting pairs to detect problems. New research suggests the high levels of brominated fire-retardant chemicals (polybrominated diphenyl ethers) found in peregrines may affect adult peregrine nesting behavior and nest success, which certainly bears watching in NJ.

Management of nesting pairs and nest sites is essential to maintain peregrines in New Jersey. Bridge-nesting birds are especially vulnerable to nest-site problems, and many other pairs occupy human-constructed sites. With site management and the cooperation of bridge and building staff, these sites can contribute to population viability and stability.

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We remember Linn Pierson who was dedicated to the restoration of peregrines in New Jersey, and whose donation continues to support this work.

References:

Clark, K.E., Y. Zhao, and C. Kane. 2009. Organochlorine pesticides, PCBs, dioxins, and metals in postterm peregrine falcon (*Falco peregrinus*) eggs from the Mid-Atlantic states, 1993–1999. Arch. Environ. Contam. Toxicol. 57:174-184.

Table 1. Site-specific results of peregrine falcon nesting in New Jersey, 2009.

Name	Occupied	Active	Eggs	Yng Hatched	Yng@ BandAge	Yng Fledged	Comments
Sedge Island WMA Tower	Y	Y	4	≥3	1	1	Parasitic fly problem
Forsythe NWR/Brigantine Tower	Y	Y	4	≥2	1	1	Parasitic fly problem[1]
Forsythe NWR/Barnegat Tower	Y	Y	3	≥1	1	1	
Marmora WMA / Sea Isle Tower	Y	Y	4	≥3	0	0	Parasitic fly problem[1]
Great Bay WMA/ water tower	single	N					
Heislerville WMA Tower	Y	Y	4	0	0	0	Lost eggs sequentially; intruder?
Egg Island WMA Tower	Y	Y	4	4	4	4	Late nest
Swan Bay WMA Tower	Y	Y	4	4	4	4	
Tuckahoe WMA Tower	Y	Y	3	≥1	1	1	
Ocean Gate (AT&T) Tower	Y	Y	4	1	1	1	Coll 3 eggs
Stone Harbor marsh	Y	Y	4	≥3	2	2	
Margate marsh	N	N					
Hilton/The Grand Casino	Y	Y	4	3	3	3	2 to WV; coll 1 egg
101 Hudson, Jersey City	Y	Y	4	3	3	2	1 died at fledging
Newark -Broad St bldg.	U	U					
Elizabeth-Union Co. Court House	Y	Y	4	4	4	4	
Sewaren building	Y	Y	≥3	0	0	0	Laid 2 clutches, 1 egg coll.
SUBTOTAL TOWERS & BUILDINGS	***14***	***14***			***25***	***24***	
Natural Site C-1 (Alpine)	Y	Y	?	?	0	0	
Natural Site C-2 (South)	Y	Y	?	?	0	0	
Natural Site C-3 (South)	N	N	0				
Natural Site C-4 (North)	Y	Y	?	?	0	0	
Natural Site C-5 (Tenafly)	Y	Y	?	?	0	0	
SUBTOTAL NATURAL SITES	***4***	***4***			***0***	***0***	
G. Washington Br. (Hudson River)	Y	Y	?	?	2	2	NY side
Betsy Ross Br. (Delaware River)	Y	Y	4	3	3	3	1 to WV
Walt Whitman Br. (Delaware River)	Y	Y	4	2	2	2	2 to WV (>fledging)
Ben Franklin Br. (Delaware River)	Y	Y	?	≥3	3	3	PA
NJ-PA Turnpike (Delaware River)	Y	Y	4	4	4	4	PA
Tacony-Palmyra (Delaware River)	Y	Y	3	1	1	1	
Burlington-Bristol (Delaware River)	Y	Y	3	3	3	2	1 died at fledging
Brigantine Bridge (A.C.)	N	N					
Vince Lombardi - NJTP Bridge	U	U					
Secaucus-Kearny NJTP Bridge	U	U					
Newark Bay Br. (NJTP or Conrail)	Y	Y	?	≥1	≥1	1	Conrail bridge
Trenton RR Bridge	U	U					
Route 3 Bridge/Hackensack (NJDOT)	Y	Y	?	≥2	2	2	Discovered '09
SUBTOTAL BRIDGES	***6 (NJ)***	***6***			***≥12***	***11***	
Totals (NJ only)	**24**	**24**			**≥37**	**35**	**(5 yng to WV)**

[1] Identified as Carnidae (*Carnus hemapterus*)

Table 2. Band numbers of peregrine falcons banded at New Jersey nest sites in 2009.

PEREGRINES BANDED IN 2009 IN NEW JERSEY						
Band	Aux Mkr	Aux color	Date	Location	Sex	Comments
1687-02817	none		19-Apr-09	Fort Monmouth	F	Adult rehabbed/released
1687-02818	none		4-May-09	Toms River	F	Adult rehabbed/released
1687-02819	A/02	b/g	23-May-09	Swan Bay	F	
1687-02820	A/03	b/g	28-May-09	Union Co. Court House	F	
1687-02821	A/04	b/g	29-May-09	A.C. Hilton	F	Removed and hacked in WV
1687-02822	A/05	b/g	29-May-09	A.C. Hilton	F	
1687-02823	A/06	b/g	30-May-09	Ocean Gate	F	
1687-02824	A/07	b/g	4-Jun-09	Burlington-Bristol Br.	F	Died at fledging 6/16/09
1687-02825	A/08	b/g	10-Jun-09	Sedge Island	F	
1687-02826	A/09	b/g	10-Jun-09	Sedge Island	F	
1687-02827	A/10	b/g	11-Jun-09	Tuckahoe	F	
1687-02828	A/11	b/g	12-Jun-09	Jersey City	F	
1687-02829	A/12	b/g	12-Jun-09	Jersey City	F	Died at fledging 6/30/09
1687-02830	A/13	b/g	13-Jun-09	Forsythe-Manahawkin	F	
1687-02831	A/14	b/g	27-Jun-09	Stone Harbor	F	
1687-02832	A/15	b/g	29-Jun-09	Egg Island/Dividing Creek	F	
1687-02833	A/17	b/g	17-Jul-09	Tacony-Palmyra Bridge	F	
2206-75778	X/94	b/g	23-May-09	Swan Bay	M	
2206-75779	X/95	b/g	23-May-09	Swan Bay	M	
2206-75780	X/97	b/g	23-May-09	Swan Bay	M	
2206-75781	60/W	b/g	28-May-09	Union Co. Court House	M	
2206-75782	61/W	b/g	28-May-09	Union Co. Court House	M	
2206-75783	62/W	b/g	28-May-09	Union Co. Court House	M	
2206-75784	63/W	b/g	29-May-09	W. Whitman Bridge	M	Removed after grounded & hacked in WV
2206-75785	64/W	b/g	29-May-09	W. Whitman Bridge	M	Removed after grounded & hacked in WV
2206-75786	65/W	b/g	29-May-09	Betsy Ross Bridge	M	
2206-75787	66/W	b/g	29-May-09	Betsy Ross Bridge	M	Removed and hacked in WV
2206-75788	67/W	b/g	29-May-09	A.C. Hilton	M	Removed and hacked in WV
2206-75789	68/W	b/g	4-Jun-09	Burlington-Bristol Br.	M	
2206-75790	69/W	b/g	4-Jun-09	Burlington-Bristol Br.	M	
2206-75791	70/W	b/g	9-Jun-09	Forsythe-Brigantine	M	
2206-75792	71/W	b/g	10-Jun-09	Sedge Island	M	
2206-75793	72/W	b/g	12-Jun-09	Jersey City	M	
2206-75794	73/W	b/g	27-Jun-09	Stone Harbor	M	
2206-75795	74/W	b/g	29-Jun-09	Egg Island/Dividing Creek	M	
2206-75796	75/W	b/g	29-Jun-09	Egg Island/Dividing Creek	M	
2206-75797	76/W	b/g	29-Jun-09	Egg Island/Dividing Creek	M	

Figure 1. Nesting and productivity of peregrine falcons in New Jersey, with comparisons between towers/buildings, cliffs, and bridges.