



New Jersey Department of Environmental Protection  
Division of Fish and Wildlife  
Dave Chanda, Director  
C. David Jenkins, Chief  
Endangered and Nongame Species Program



## Peregrine Falcon Research and Management Program in New Jersey, 2012

Kathleen Clark, Endangered and Nongame Species Program  
Ben Wurst, Conserve Wildlife Foundation of New Jersey  
Mick Valent, Endangered and Nongame Species Program



Tiercel nesting at the Burlington-Bristol Bridge in Burlington County, NJ.

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

***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 Palisades cliffs in 2003 was the beginning of a more complete recovery, but nest success at the cliffs has been low and 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.

## **Summary of Results**

In 2012 the New Jersey peregrine falcon population remained nearly steady at 26 known pairs, with above-average nesting success. The run-down of nesting follows here:

- ❖ Fourteen pairs on towers and buildings continued to be the core of the nesting population, producing 34 young, for a productivity rate of 2.43 young per active nest, which is about 40% higher than the long term average for New Jersey once the population stabilized in 1986.
- ❖ Three pairs were known to occupy territories in natural cliff habitat in northeastern NJ, down two from 2010; a fourth pair listed as territorial in 2011 was not tracked. Two of the three pairs were successful in fledging young (4 and 1, respectively), while a third pair showed no sign of hatching or fledging young. We did not see ravens nesting in that territory, as we did last year.
- ❖ Of seven pairs on bridges, six were known to have produced 14 young, for a rate of 2.00 young/active nest. We could not confirm successful fledging at one bridge where nesting was discovered for the first time. Some previously occupied bridges (e.g., Trenton, Hackensack and Newark Bay) were not tracked due to insufficient staff or volunteers. New Jersey monitored four pairs on bridges spanning the NJ-PA border. Pairs on the Betsy Ross and Walt Whitman bridges raised zero and one young, respectively. Pairs at Burlington-Bristol and

Tacony-Palmyra bridges produced four and three young, respectively. Successful nesting was found this year on the Route 1 Bridge in New Brunswick and the Parkway-Great Egg Harbor Bridge. Other bridges may have been occupied, but the program lacked monitors in northern NJ to document all possible sites.

- ❖ We classified two pairs of the NJ total as territorial: one pair included a one-year-old female, too young to lay eggs. The other pair was observed late in the season at the Heislerville water tower with a recent fledgling; no birds had been seen there earlier, so we suspect they nested nearby.

Weather conditions during incubation and chick-rearing were very fair, so there was little negative influence of weather. The exception was the June 30<sup>th</sup> windstorm that hit Atlantic County hard; we suspect that two recent fledglings were lost as a result.

We treated <2-week-old hatchlings with bird lice spray at two building nests and four tower nests to reduce infestations of parasitic flies (*Carnus hemapterus*). These flies have caused mortality of young hatchlings in recent years. The fly infestation was severe at three tower sites (Swan Bay, Forsythe-Brigantine, Dividing Creek), and likely caused early mortality of all but one chick at Swan Bay. The relatively mild winter in 2011-2012 may have resulted in better conditions for those parasites.

We banded all but eight of the 51 known young produced at 22 successful nests, using both a federal band and a bicolor band with an alpha-numeric code. Of the young not banded, they fledged from five sites: one at an inaccessible building, six at bridges and one at a cliff.

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

### **Highlights:**

In 2012 we continued to use remote, motion-activated cameras to photograph peregrines at nests. Using this method we read the leg bands on 16 breeding adults at nine nest sites. An additional seven adults were identified using optics. The oldest birds identified were a 14-year-old female (Atlantic City) and a 13-year-old male (Swan Bay WMA). Last year's oldest bird, a 15-year-old female at Ocean Gate, was missing this year, replaced by a one-year old female that did not lay eggs. The average age of 14 males was 7.7, and of 14 females was 6.9 years. The information that these identifications provide is immensely valuable for relating peregrine origin and age to nest success, site fidelity and turnover rate in the population.

In addition to the resightings we recorded at nest sites, three peregrines were resighted at nest sites in VA and WV: An 8 year old female was found nesting in coastal marsh in 2011, another 4 year old female also in a marsh situation in 2011, and a 3 year old female nesting in a quarry near Harper's Ferry, WV, in 2010.

The nest atop 101 Hudson Street in Jersey City remained a highlight for New Jersey peregrine watchers. The pair began incubation 30 March and hatched three on 3 May. One young died on 20 June, shortly after fledging; the other two young were observed flying with the adults though July, but one ended up in poor condition and died by the time it was delivered to the Raptor Trust. The nesting season was documented online at <http://njfishandwildlife.com/peregrinecam/jcp-2011nestnews.htm>.

After donating young peregrine falcons to West Virginia's recovery project between 2006 and 2011, that project was concluded. Falcons that originated in NJ have been confirmed nesting in southern WV and western VA.

The Division of Fish and Wildlife adopted changes to our endangered and nongame wildlife lists that changed the non-breeding season status of NJ peregrines from endangered to special concern. The change for the non-breeding population (defined by dates, August 1-February 15) did not change the protections afforded to peregrines in any appreciable way. However, it did remove the peregrine from the state endangered list, which allowed the state to participate in the U.S. Fish and Wildlife-permitted limited "take" of passage peregrines according to Flyway and federal regulations, in September 2012. New Jersey's allowed take was one juvenile peregrine falcon during the fall migration period.

**Conclusions:** The peregrine population remained steady in 2012, and nest success and productivity rose in 2012. Across all sites – towers, buildings, bridges and cliffs – nest success was 92% and produced 2.21 young per active site, both figures that are well above average (Figure 1). The tower and building nest sites are the consistent center of the population in NJ, without which the population would fluctuate widely year to year. Management of nest sites, mainly to provide safe, undisturbed situations for the birds, continues to be the predominant factor in a stable and productive population. Nest success at cliff sites was generally improved over recent years, but it remains difficult to watch these nests and identify sources of failures.

We plan to continue collecting unhatched, salvaged eggs for contaminant research, and to continue monitoring nests 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.

***Our Thanks To:*** Volunteers who protect and watch over peregrine falcons in New Jersey, including Pete McLain, McDuffy Barrow, Mike Girone, Ray Gilbert, Bonnie Talluto, Rick Weiman, Keith and Jackie Parker, Hans Toft; Beth Balbierz, Elmer & Bunny Clegg, Dan Brill, Atlantic City Hilton staff (Mel Thompson, Pete Aiuto, and others); Forsythe NWR staff and volunteers; Delaware River Port Authority staff (Tim Jankowski, Larry Walton, Chuck Wadding, Steve James); Palisades Interstate Park Commission and the Palisades Interstate Parkway Police; Betty Ann Kelly, Thomas MacDermant and John Salerno at the Union County Court House; the Burlington County Bridge Commission and Jack DiGiovanna; Palmyra Nature Center and Kristina Merola; the Port Authority of NY/NJ, Barbara Deen and Mack-Cali engineers; and John Deemer at PBF Energy. Thanks to caregivers Don and Karen Bonica at Toms River Avian Care, The Raptor Trust, and Tri-State Bird Rescue & Research, Dr. Stephen Wurst at Barnegat Animal Clinic. Special thanks to John Gumbs and Mitzi Kaiura at the cliffs.

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***The Jersey City WebCam*** ([www.njfishandwildlife.com/peregrinecam](http://www.njfishandwildlife.com/peregrinecam)) was funded by the Conserve Wildlife Foundation of NJ and maintained by Division staff Paul Tarlowe. Special thanks to Barbara Deen and Mack-Cali engineers.

*We remember Linn Pierson, whose legacy gift to the Conserve Wildlife Foundation of New Jersey supports the Peregrine Falcon Project.*



Table 1. Site-specific results of peregrine falcon nesting in New Jersey, 2012.

Name	Occupied	Active	Eggs	Yng Hatched	Yng @ BandAge	Yng Fledged	Comments
Sedge Island WMA Tower	Y	Y	4	Unk	1	1	
Forsythe NWR/Brigantine Tower	Y	Y	3	3	3	3	Treated early for flies
Forsythe NWR/Barnegat Tower	Y	Y	4	4	4	4	
Marmora WMA / Sea Isle Tower	Y	Y	4	2	2	2	Lost 1 <sup>st</sup> clutch?
Great Bay WMA/ water tower	N	N					
Heislerville WMA Tower	Y	Unk					Obs. 1 fledgling 8/17/12
Egg Island WMA Tower	Y	Y	4	4	4	4	
Swan Bay WMA Tower	Y	Y	4	1	1	1	Coll. 1 egg
Tuckahoe WMA Tower	Y	Y	3	2	2	2	Col. 1 broken egg
Ocean Gate (AT&T) Tower	Y	N	0				Female is 1 year old
Stone Harbor marsh	Y	Y	4	3	3	3	
Margate marsh	Y	Y	4	Unk	2	2	Unk if survived 6/30 storm
Hilton/The Grand Casino	Y	Y	4	4	4	4	Butler's end
101 Hudson, Jersey City	Y	Y	5	3	3	3	Coll. 2 eggs
Newark – <i>Unknown location</i>	U	U				U	
Elizabeth-Union Co. Court House	Y	Y	4	4	4	4	
Sewaren building	Y	Y	Unk			≥1	Fledgling obs. 6/1
Refinery (Greenwich-Paulsboro)	Y	Y	3	0	0	0	Eggs broke in nest
<b><i>SUBTOTAL TOWERS &amp; BUILDINGS</i></b>	<b>16</b>	<b>14</b>		<b>30</b>	<b>33</b>	<b>34</b>	
Natural Site C-1 (Alpine)	Y	Y	Unk	U	1	1	Not banded. New ledge.
Natural Site C-2 (South)	Y	Y	5	5	5	4	
Natural Site C-3 (South)	N	N					
Natural Site C-4 (North)	Y	Y	Unk	0	0	0	
Natural Site C-5 (Tenafly)	U	U	U	U	U	U	
<b><i>SUBTOTAL NATURAL SITES</i></b>	<b>3</b>	<b>3</b>		<b>≥6</b>	<b>6</b>	<b>5</b>	
G. Washington Br. (Hudson River)	Y	Y					NY side/NY monitored
Betsy Ross Br. (Delaware River)	Y	Y	3	0	0	0	
Walt Whitman Br. (Delaware R.)	Y	Y	U	U	1	1	NJ tower
Ben Franklin Br. (Delaware River)	Y	Y	U	U	4	4	PA side/PA monitored
NJ-PA Turnpike (Delaware River)	Y	Y	U	4	4	4	PA side/PA monitored
Tacony-Palmyra (Delaware River)	Y	Y	U	U	3	3	
Burlington-Bristol (Delaware R.)	Y	Y	4	4	4	4	
Rt 78-Scudders Falls Bridge	Y	Y	U	U		0	PA side/PA monitored
Brigantine Bridge (A.C.)	U	U				U	1 fledgling found 6/20 north end of A.C.
Vince Lombardi - NJTP Bridge	U	U					
Secaucus-Kearny NJTP Bridge	U	U					
Newark Bay Br. (NJTP or Conrail)	U	U	?	?	?	?	
Trenton RR Bridge	U	U					
Route 3 Br./Hackensack (NJDOT)	U	U	?	?	?	?	
Route 46 Bridge Hackensack	Y	Y	?	?	1	1	Not banded.
Route 35/Belmar Bridge	U	U	?	?			
G. Egg Harbor-Parkway Bridge	Y	Y			3	3	Unk survival post-fledging. Not banded.
Route 1 Raritan Bridge	Y	Y			2	2	Not banded
<b><i>SUBTOTAL BRIDGES</i></b>	<b>7 (NJ)</b>	<b>7</b>		<b>6</b>	<b>14</b>	<b>≥14</b>	
<b>TOTALS (NJ only)</b>	<b>26</b>	<b>24</b>		<b>42</b>	<b>≥53</b>	<b>≥53</b>	<b>53 yng/24 KON=2.21</b>

Table 2. Band numbers of 46 peregrine falcons banded at New Jersey nest sites in 2012, and two peregrines encountered away from nests in Atlantic City. Auxiliary markers are black over green.

Band number	Color band	Date	Location	Sex	Comments
1687-02879	21/AN	12-May-12	Swan Bay	F	
1687-02880	22/AN	17-May-12	Tacony-Palmyra Bridge	F	
1687-02881	23/AN	22-May-12	AC Hilton/Atlantic Club	F	
1687-02882	25/AN	23-May-12	Palisades-Englewood	F	1 of the 4 females banded died pre-fledging.
1687-02883	26/AN	23-May-12	Palisades-Englewood	F	
1687-02884	27/AN	23-May-12	Palisades-Englewood	F	
1687-02885	28/AN	23-May-12	Palisades-Englewood	F	
1687-02886	29/AN	24-May-12	Jersey City	F	
1687-02887	30/AN	24-May-12	Union Co. Courthouse	U	
1687-02888	31/AN	24-May-12	Union Co. Courthouse	F	
1687-02889	32/AN	25-May-12	Tuckahoe	F	
1687-02890	33/AN	25-May-12	Tuckahoe	F	
1687-02891	34/AN	31-May-12	Walt Whitman Br	F	
1687-02892	35/AN	31-May-12	Burlington-Bristol Br	F	
1687-02893	35/AN	1-Jun-12	Stone Harbor	F	
1687-02894	37/AN	1-Jun-12	Stone Harbor	F	
1687-02895	38/AN	1-Jun-12	Stone Harbor	F	
1687-02896	39/AN	2-Jun-12	Egg Island/Dividing Cr.	F	
1687-02897	40/AN	2-Jun-12	Egg Island/Dividing Cr.	F	
1687-02898	41/AN	4-Jun-12	Forsythe-Manahawkin	F	
1687-02899	42/AN	4-Jun-12	Forsythe-Manahawkin	F	
1687-02900	43/AN	5-Jun-12	Forsythe-Brigantine	F	
1687-02901	44/AN	5-Jun-12	Forsythe-Brigantine	F	
1687-02902	45/AN	12-Jun-12	Margate	F	Nest affected by 6/30/12 storm
1687-02903	46/AN	27-Jun-12	Sea Isle City	F	
1687-02905	none	11-Sep-12	AC Hilton bdwalk	F	Migrant?
1687-02906	none	8-Oct-12	Atlantic City-north end	F	Recent fledgling (6/20) rehabbed & trained.
1687-02909	24/AN	22-May-12	AC Hilton/Atlantic Club	F	
2206-75833	12/AM	17-May-12	Tacony-Palmyra Bridge	M	
2206-75834	13/AM	17-May-12	Tacony-Palmyra Bridge	M	
2206-75835	14/AM	22-May-12	AC Hilton/Atlantic Club	M	
2206-75836	15/AM	22-May-12	AC Hilton/Atlantic Club	M	
2206-75837	16/AM	23-May-12	Palisades-Englewood	M	
2206-75838	17/AM	24-May-12	Jersey City	M	
2206-75839	18/AM	24-May-12	Jersey City	M	
2206-75840	19/AM	24-May-12	Union Co. Courthouse	M	
2206-75841	20/AM	24-May-12	Union Co. Courthouse	M	
2206-75842	21/AM	31-May-12	Burlington-Bristol Br	M	
2206-75843	22/AM	31-May-12	Burlington-Bristol Br	M	
2206-75844	23/AM	31-May-12	Burlington-Bristol Br	M	
2206-75845	25/AM	2-Jun-12	Egg Island/Dividing Cr.	M	
2206-75846	26/AM	4-Jun-12	Forsythe-Manahawkin	M	
2206-75847	27/AM	4-Jun-12	Forsythe-Manahawkin	M	
2206-75848	28/AM	5-Jun-12	Forsythe-Brigantine	M	
2206-75849	24/AM	2-Jun-12	Egg Island/Dividing Cr.	M	
2206-75850	29/AM	7-Jun-12	Sedge Island	M	
2206-75851	30/AM	21-Jun-12	Margate	M	Nest affected by 6/30/12 storm
2206-75852	31/AM	27-Jun-12	Sea Isle City	M	

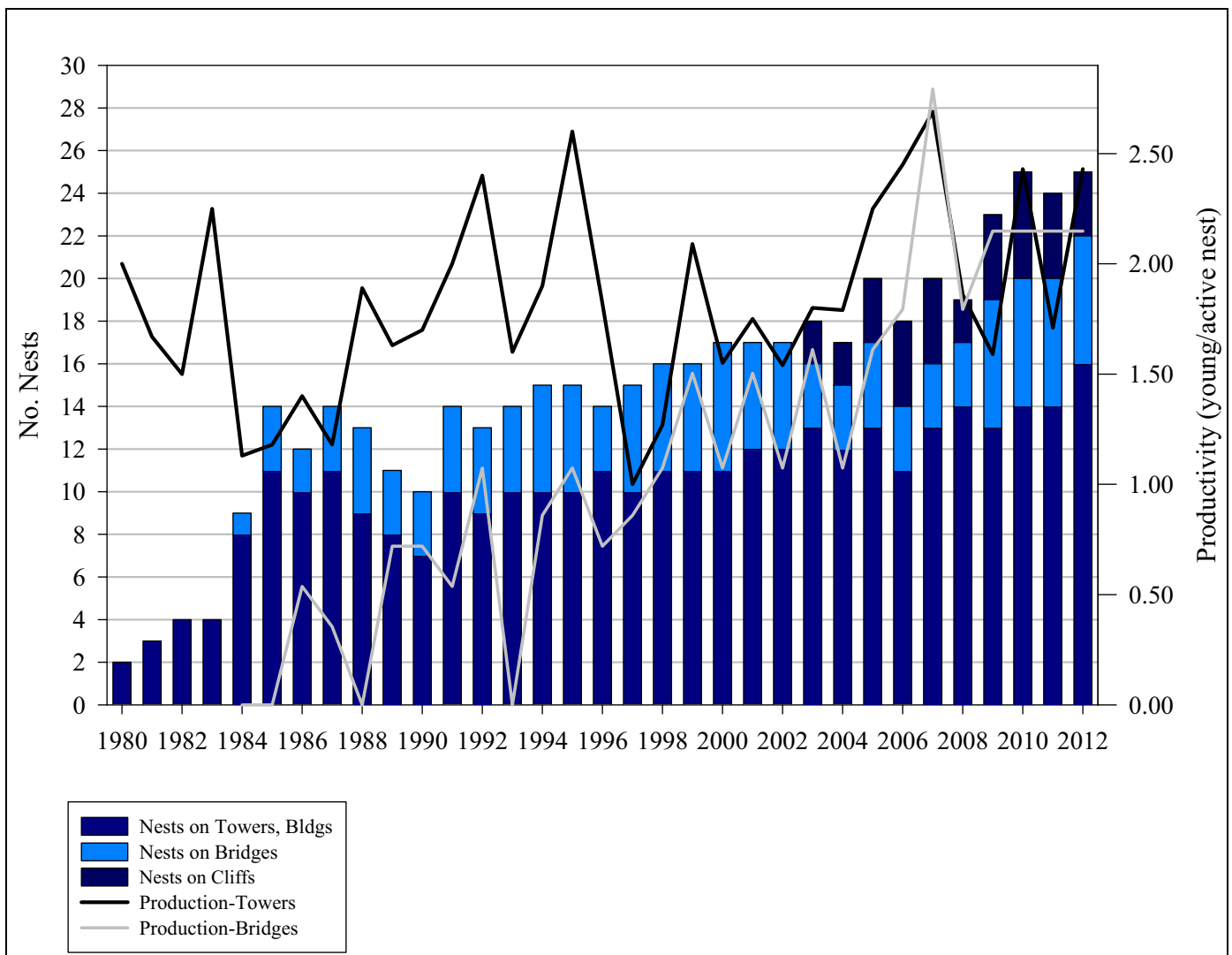


Figure 1. Nesting and productivity of peregrine falcons in New Jersey, with comparisons between towers/buildings, cliffs, and bridges.

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