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Peregrine Falcon
Research and Management Program
In New Jersey, 2013

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Peregrine falcon nesting at the Palisades in Bergen County, NJ. Photo courtesy of Herb Houghton©2013

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

The 2013 New Jersey peregrine falcon population remained stable with 26 pairs occupying appropriate nesting habitat across the state. The population exhibited high productivity with all but two pairs successfully fledging at least one young. A total of 24 nests produced 57 young for a success rate of 92% and a production rate of 2.19 young per active nest. A brief summary of data collected during the 2013 nesting season follows:

- Fifteen pairs utilizing towers and buildings continue to be the core of the nesting population, producing 37 young, for a productivity rate of 2.47 young per active nest, which is close to the long term average for towers and buildings since the state's population stabilized in 1986.

- Four pairs occupied nesting territories in the natural cliff habitat located in northeastern NJ. Only two of those pairs successfully fledged a total of five young (two and three fledglings, respectively) for a productivity rate of 1.25 young per active nest. The remaining two pairs exhibited territorial behavior, but no signs of young were observed in June or July. It is unclear

as to which factors contribute to the limited and sporadic use of appropriate nesting ledges along the cliff. Human disturbance may play a role, as some ledges are located in areas where public access atop the cliff face is difficult to restrict or completely eliminate. We did not observe ravens nesting in any of the peregrine territories, as we did in 2011.

- Seven pairs of falcons were known to nest on bridges this year. Four of those bridges lie completely within the boundaries of NJ, while three span the Delaware River between NJ and PA and are monitored by NJ (in addition, some data from PA-monitored bridges can be found in Table 1). All bridge pairs fledged a total of 15 young for a productivity rate of 2.14 young per active nest. As has been the case in previous years, nesting can be difficult to confirm, as the nest sites are often located out of sight or on inaccessible sections of the bridge. The pair nesting on the Burlington-Bristol Bridge fledged all four of its young, while the Tacony-Palmyra and Betsy Ross bridges fledged three and one, respectively. Three pairs of falcons nesting on smaller bridges in urbanized areas of northern New Jersey produced a total of four fledglings. A seventh bridge-nesting pair occupied the new Ocean City-Longport Bridge, and went undetected until three fledglings were observed at the bridge. One pair, which had previously nested on the Great Egg Harbor Parkway Bridge in 2012, relocated to a new structure on Drag Island, less than 300m away, that was provided by Conserve Wildlife Foundation as part of the bridge replacement plan. Some previously occupied bridges (e.g., Trenton and Newark Bay) were not tracked due to insufficient staff or volunteers. Other bridges may have been occupied, but the program lacked monitors in northern NJ to document all possible sites.

We were able to band 44 of the 57 young produced this year, fitting nestlings with an aluminum federal band and an auxiliary, bicolor band engraved with an alpha-numeric code unique to NJ. The 13 young we were unable to band originated from three bridges in central/northern NJ (4 nestlings), one bridge in the south (3 nestlings), a building in northern NJ (3 nestlings), a cliff ledge (2) and a water tower in Atlantic City (1).

We treated <2-week old hatchlings with bird lice spray at two tower nests (Swan Bay WMA and Tuckahoe WMA) to reduce infestations of parasitic flies (*Carnus hemapterus*). These flies have caused mortality of young hatchlings in recent years. With treatment no chicks were lost to fly infestations this season.

Eleven addled eggs were collected from six different nest sites this season. In an agreement with Dr. Da Chen of Southern Illinois University, we transferred to him 88 eggs collected between 1990 and 2013 for toxicological analysis. Dr. Chen's research will focus on the accumulation and effects of flame retardants, but he will also provide the organochlorine analysis that will allow us to report on trends in a range of environmental contaminants.

We continued to operate a camera providing live views of the peregrine nest atop 101 Hudson Street in Jersey City. The webcam has remained popular with peregrine watchers statewide. This year the first egg was laid on April 3, with a complete clutch of four eggs visible on

the camera on April 11. Unfortunately, only one egg hatched on May 14, and this nestling was never in good health. On May 17, we fostered a nestling (one of four) from the Sea Isle City nest into the 101 Hudson nest. At this time we removed the ailing chick and delivered it to the Raptor Trust for treatment, but the chick did not respond to any treatment and was later euthanized. The fostered chick was readily accepted and nurtured by the adult peregrines. We banded the nestling on June 5, and the camera (and local peregrine observers) confirmed fledging soon afterward on June 15. The nesting season was documented online at: www.njfishandwildlife.com/peregrinecam/jcp-2013nestnews.htm.

In February of 2013, CWF-NJ constructed a new nest tower on Drag Island adjacent to the Garden State Parkway bridge that spans Great Egg Harbor Bay. Peregrines nested on the bridge in 2012, but we think all the young were lost to the bay upon fledging. Further, proposed bridge construction and modification prompted us to request the new tower as a more suitable and protected nest site for the birds to use. The new tower had an immediate impact on the nesting success of this pair, as they were able to fledge four young this year.

We also erected a new nest tower at Stone Harbor marsh in July, 2013. The pair here nested on a platform originally installed for ospreys, and was close to the busy waterway. The pair was observed perched on the new tower just days after its completion.

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.

Resightings and Recoveries

We continued to use remote, motion-activated cameras to photograph peregrines at nests. Using this method we read the leg bands on 15 breeding adults at nine nest sites. An additional five adults were identified using optics. The oldest female identified was a 16 year-old that nests in Atlantic City; she did not lay eggs this year and may be beyond her reproductive age. Three different 8-year old males were identified at three nest sites this year and represented the current oldest known males in the breeding population; the oldest tiercel in 2012 (age 13) was gone in 2013. The average age of seven males was 6.0 years, while that of 13 females was 9.0 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 NJ nest sites, we received reports of peregrines from elsewhere. A female banded at Margate, NJ (A/01) in 2008 was observed with a tiercel at a cliff site in Connecticut in 2012 and 2013. In an interesting swap, a CT female (band V/24) nested

on the Route 1 Bridge in New Brunswick, NJ in 2012 (and probably in 2013 as well). A male (36/AP) banded at the Ben Franklin Bridge in PA in 2011 nested at a Paulsboro, NJ refinery; he replaced the 2003 Jersey City tiercel that had nested there previously. A female (17/AN) banded at Tuckahoe, NJ in 2011 was resighted in Stone Harbor, NJ in November of 2012. A female (37/AN) banded in Stone Harbor in 2012 was recaptured at a banding station in Assateague National Seashore on two different dates – Sept. 29, 2012 (when she was likely moving through, going south) and Sept. 28, 2013, as an adult and possibly living in the area. In late October, this year's fledgling (59/AN) was photographed for weeks at Holgate; she had fledged from the Great Egg Harbor nest in July. Four other banded peregrines were reported dead: a third-year bird (10/AN from Sedge Island) at Atlantic City Airport in April 2013; a hatching-year bird (04/AN, Elizabeth) at a CT airport in Oct. 2011; a second-year female rehabbed after being found injured, found dead on a highway in DE; and a third-year bird (a fall migrant) found dead in Burlington County.

Conclusions

The peregrine population increased slightly in 2013, with above-average nest success and productivity. Across all sites – towers, buildings, bridges and cliffs – nest success was 92% and produced 2.19 young per active site, figures that are both 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 nesting environments 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.

Our new partnership with researchers at Southern Illinois University to analyze peregrine eggs collected over the last decade should provide informative results to help us track the trends in environmental contaminants, and to evaluate the exposure levels in the mid-Atlantic region.

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, Frank Budney; Atlantic City Hilton staff (Mel Thompson, Pete Aiuto, and others); Forsythe NWR staff and volunteers; Delaware River Port Authority staff (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 and staff at PBF Energy. Thanks to caregivers Dr. Erica Miller, Don and Karen Bonica at Toms River Avian Care, The Raptor Trust, Tri-State Bird Rescue & Research, and Dr. Stephen Wurst at Barnegat Animal Clinic. Special thanks to the climbing crew: John Gumbs and Mitzi Kaiura at the cliffs.

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The Jersey City WebCam (www.njfishandwildlife.com/peregrinecam) was supported 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, 2013

Site Name	Occupied	Active	Eggs	Young Hatched	Young @ Band Age	Young Fledged	Comments
101 Hudson, Jersey City	Y	Y	4	1	1	1	Chick from original clutch died in rehab; fostered chick from Sea Isle
Atlantic City – North End Water Tower	Y	Y	U	3	2	3	
Bayside Prison Water Tower	U	U	-	-	-	-	
Drag Island	Y	Y	4	4	4	4	New tower; built 2/2013
Egg Island WMA	Y	Y	4	2	2	2	
Elizabeth-Union County Court House	Y	Y	4	3	3	3	Collected 1 egg
Forsythe NWR/Barnegat Tower	Y	Y	4	3	3	3	
Forsythe NWR/Brigantine Tower	Y	Y	4	2	2	2	First clutch (1 egg) failed
Great Bay WMA/Water Tower	N	N	-	-	-	-	
Heislerville WMA Tower	Tower removed in 2012, nest box moved to Bayside Prison water tower						
Hilton/The Grand Casino	N	N	-	-	-	-	Female is 16-years old
Margate Marsh	N	N	-	-	-	-	
Marmora WMA/Sea Isle Tower	Y	Y	4	4	3	3	Fostered 1 chick at 101 Hudson
Ocean Gate (AT&T) Tower	Y	Y	4	1	1	1	Collected 3 eggs
Paulsboro Refinery	Y	Y	4	4	4	4	
Sedge Island WMA Tower	Y	Y	3	1	1	1	Collected 2 eggs
Sewaren Generating Station	Y	Y	U	3	0	3	Unable to band
Stone Harbor Marsh	Y	Y	4	2	2	2	
Swan Bay WMA Tower	Y	Y	4	3	3	3	Collected 1 egg
Tuckahoe WMA Tower	Y	Y	3	2	2	2	
SUBTOTAL: TOWERS & BUILDINGS	***15***	***15***	***50***	***38***	***33***	***37***	***Total of 10 eggs collected***
Delaware Water Gap (NJ Side)	U	U	-	-	-	-	
Natural Site C-1 (Alpine)	Y	Y	U	2	0	2	Unable to band
Natural Site C-2 (Englewood)	Y	Y	4	3	3	3	Collected 1 egg
Natural Site C-3 (Carpenter Cir-Ross Dock)	N	N	-	-	-	-	
Natural Site C-4 (Bombay Hook Portion)	Y	Y	-	-	-	-	
Natural Site C-4 (Ruckman-State Line)	Y	Y	-	-	-	-	
Natural Site C-5 (Tenafly-Greenbrook)	N	N	-	-	-	-	
SUBTOTAL: NATURAL SITES	***4***	***4***	***4***	***5***	***3***	***5***	***Total of 1 egg collected***
Ben Franklin Bridge (Delaware River)*	Y	Y	U	2	2	2	PA side/PA monitored
Betsy Ross Bridge (Delaware River)	Y	Y	3	1	1	1	
Brigantine Bridge (Atlantic City)	U	U	-	-	-	-	
Burlington-Bristol Bridge (Delaware River)	Y	Y	4	4	4	4	
Commodore Barry Bridge (Delaware River)*	Y	Y	U	3	3	3	PA side/PA monitored
Geo. Washington Bridge (Hudson River)*	U	U	-	-	-	-	NY side/NY monitored
Great Egg Harbor-Parkway Bridge	Pair now nesting on the Drag Island tower						
Newark Bay Bridge (NJTP or Conrail)	U	U	-	-	-	-	
NJ-PA Turnpike Bridge (Delaware River)*	Y	Y	U	3	3	3	PA side/PA monitored
North Trenton-Scudders Falls Bridge*	Y	Y	U	2	0	2	PA side/PA monitored
Ocean City-Longport Bridge	Y	Y	U	U	0	3	Found post-fledging
Route 1 Bridge/Raritan-New Brunswick	Y	Y	U	1	0	1	Unable to band; fledgling observed
Route 3 Bridge/Hackensack (NJDOT)	Y	Y	U	1	0	1	Unable to band; fledgling observed
Route 35 Bridge/Belmar	U	U	-	-	-	-	
Route 46 Bridge/Little Ferry-Ridgefield Park	Y	Y	U	2	0	2	Unable to band
Secaucus-Kearny NJTP Bridge	U	U	-	-	-	-	
Tacony-Palmyra Bridge (Delaware River)	Y	Y	4	3	3	3	
Trenton RR Bridge	U	U	-	-	-	-	
Vince Lombardi – NJTP Bridge	U	U	-	-	-	-	
Walt Whitman Bridge (Delaware R.)*	Y	Y	U	1	1	1	PA side/PA monitored
SUBTOTAL: BRIDGES (NJ only)	***7***	***7***	***≥11***	***≥12***	***8***	***15***	
TOTALS (NJ Only)	**26**	**26**	**≥65**	**≥55**	**44**	**57**	**57 yng/26 known-outcome nests=2.19 young per nest**

U = Unknown

*denotes bridges not monitored by New Jersey

Table 2. Peregrine falcons banded in 2013. Auxiliary color bands are black over green.

Band Number	Auxiliary Color Band	Date	Location	Sex	Comments
1687-02907	48/AN	20-May-13	Tacony-Palmyra Bridge	F	
1687-02908	49/AN	20-May-13	Tacony-Palmyra Bridge	F	
1687-02910	50/AN	20-May-13	Tacony-Palmyra Bridge	F	
1687-02911	51/AN	22-May-13	Elizabeth-Union County Court House	F	
1687-02912	52/AN	22-May-13	Elizabeth-Union County Court House	F	
1687-02913	53/AN	28-May-13	Natural Site C-2 (Englewood)	F	
1687-02914	54/AN	28-May-13	Natural Site C-2 (Englewood)	F	
1687-02915	55/AN	1-Jun-13	Swan Bay WMA	F	
1687-02916	56/AN	1-Jun-13	Marmora WMA - Sea Isle	F	Four chicks hatched; one translocated to 101 Hudson, Jersey City; fledged successfully
1687-02917	57/AN	1-Jun-13	Marmora WMA - Sea Isle	F	
1687-02918	Band lost				
1687-02919	58/AN	1-Jun-13	Marmora WMA - Sea Isle	F	
1687-02920	59/AN	3-Jun-13	Drag Island	F	
1687-02921	60/AN	3-Jun-13	Drag Island	F	
1687-02922	61/AN	3-Jun-13	Forsythe NWR/Barnegat	F	
1687-02923	62/AN	3-Jun-13	Forsythe NWR/Barnegat	F	
1687-02924	Band lost				
1687-02925	63/AN	4-Jun-13	Pauslboro Refinery	F	
1687-02926	64/AN	4-Jun-13	Pauslboro Refinery	F	
1687-02927	65/AN	4-Jun-13	Pauslboro Refinery	F	
1687-02928	66/AN	4-Jun-13	Burlington-Bristol Bridge	F	
1687-02929	67/AN	8-Jun-13	Egg Island WMA	F	
1687-02930	68/AN	8-Jun-13	Egg Island WMA	F	
1687-02931	69/AN	17-Jun-13	Atlantic City-North End Water Tower	F	
1687-02932	70/AN	17-Jun-13	Atlantic City-North End Water Tower	F	
1687-02933	71/AN	20-Jun-13	Sedge Island WMA	F	
1687-02934	72/AN	22-Jul-13	Forsythe NWR/Brigantine	F	
2206-75853	32/AM	22-May-13	Elizabeth-Union County Court House	M	
2206-75854	33/AM	28-May-13	Natural Site C-2 (Englewood)	M	
2206-75855	34/AM	1-Jun-13	Swan Bay WMA	M	
2206-75856	35/AM	1-Jun-13	Swan Bay WMA	M	
2206-75857	36/AM	3-Jun-13	Drag Island	M	
2206-75858	37/AM	3-Jun-13	Drag Island	M	
2206-75859	Band destroyed				
2206-75860	39/AM	3-Jun-13	Forsythe NWR/Barnegat	M	
2206-75861	38/AM	3-Jun-13	Ocean Gate (AT&T)	M	
2206-75862	40/AM	4-Jun-13	Paulsboro Refinery	M	
2206-75863	41/AM	4-Jun-13	Burlington-Bristol Bridge	M	
2206-75864	42/AM	4-Jun-13	Burlington-Bristol Bridge	M	
2206-75865	43/AM	4-Jun-13	Burlington-Bristol Bridge	M	
2206-75866	44/AM	5-Jun-13	101 Hudson, Jersey City	M	Only chick from original clutch ill and taken to rehab, but euthanized. Fostered chick from Marmora WMA; chick banded and fledged.
2206-75867	45/AM	8-Jun-13	Tuckahoe WMA	M	
2206-75868	46/AM	8-Jun-13	Tuckahoe WMA	M	
2206-75869	47/AM	9-Jun-13	Stone Harbor Marsh	M	
2206-75870	48/AM	9-Jun-13	Stone Harbor Marsh	M	
2206-75871	49/AM	18-Jun-13	Betsy Ross Bridge	M	
2206-75872	50/AM	22-Jul-13	Forsythe NWR/Brigantine	M	

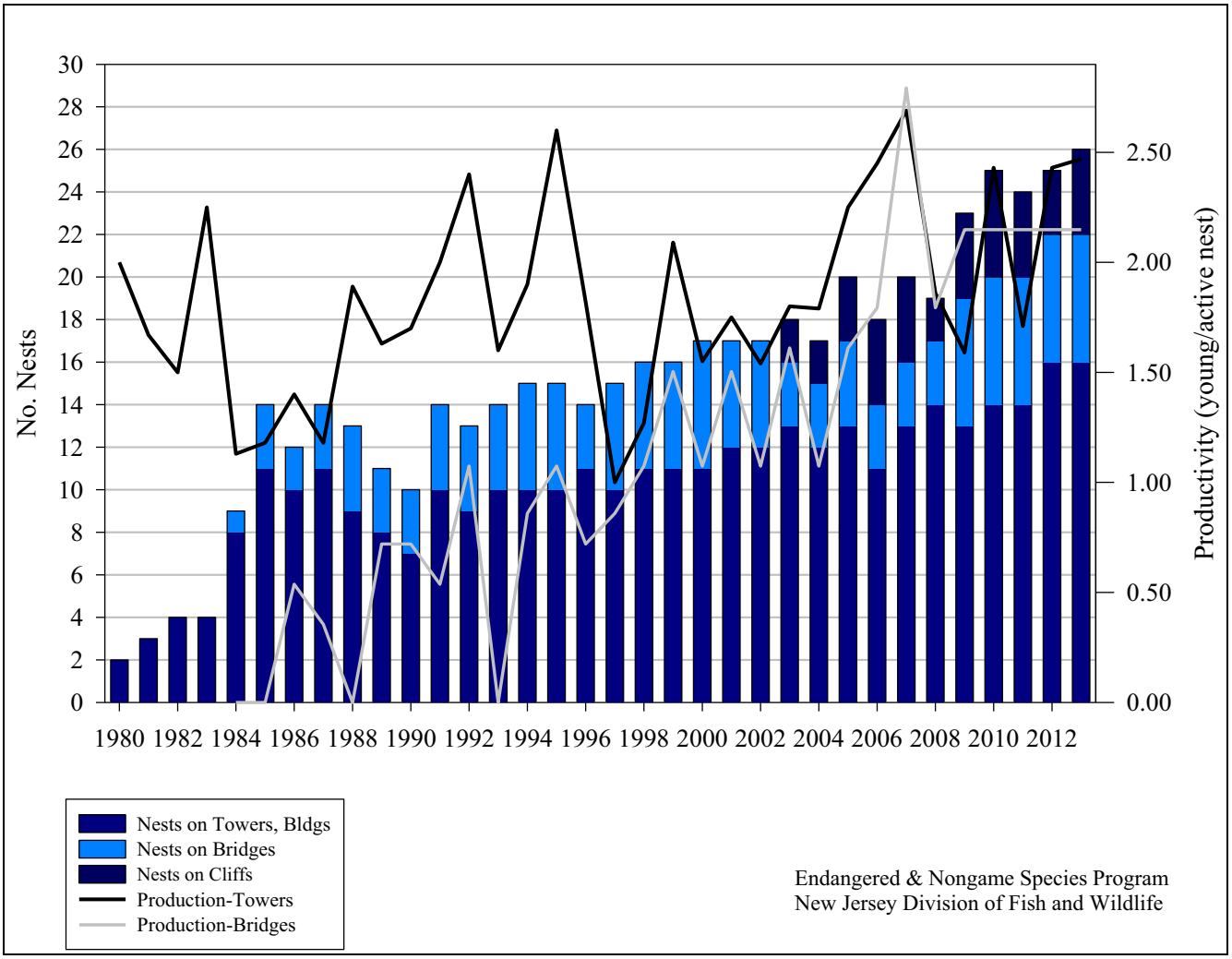

Figure 1. Nesting and productivity of peregrine falcons in New Jersey, with comparisons between towers/buildings, cliffs, and bridges

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