

**PENNSYLVANIA GAME COMMISSION
BUREAU OF WILDLIFE MANAGEMENT
PROJECT ANNUAL JOB REPORT**

PROJECT CODE NO.: 06715

TITLE: Peregrine Falcon Research/Management

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TITLE: Peregrine Falcon Investigations

PERIOD COVERED: 1 January 2014 to 31 December 2014

COOPERATING AGENCIES AND ORGANIZATIONS: The Aark Wildlife Rehabilitation and Education Center; Academy of Natural Sciences of Philadelphia; Pennsylvania American Water Company; Carbon County Environmental Education Center; Comcast Center; Delaware River Joint Toll Bridge Commission; Delaware River Port Authority; Delaware Valley Raptor Center; Delaware Water Gap National Recreation Area; Gulf Tower; Harcon Bridge Access Services; Make a Wish Foundation; The National Aviary; New Jersey Division of Fish, Game, and Wildlife; New Jersey Turnpike Authority; Packer Ave. Marine Terminal; Pennsylvania Department of Conservation and Natural Resources; Pennsylvania Department of Environmental Protection; Pennsylvania Department of Transportation; Pennsylvania Fish and Boat Commission; Pennsylvania Turnpike Commission; Philadelphia City Hall; Philadelphia Zoo; Pocono Wildlife Rehabilitation and Education Center; PPL Corporation; Red Creek Wildlife Center; Ritz-Carlton Hotel, Philadelphia; Schuylkill Center for Environmental Education - Wildlife Division; Southern Illinois University; Tri-State Bird Rescue & Research; University of Pittsburgh; US Army Corps of Engineers; US Fish & Wildlife Service; Western Pennsylvania Conservancy.

WORK LOCATIONS: Statewide

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ABSTRACT The long-term management goal of this project is to re-establish a self-sustaining peregrine falcon (*Falco peregrinus*) population in Pennsylvania (Brauning et. al. 2013). Monitoring of peregrine falcon nesting activity was accomplished using agency personnel and over 200 volunteers. Over 60 sites and additional locations across the state were searched for falcon activity. We coordinated with managers at over 20 bridge and building sites undergoing construction and maintenance projects to ensure protections for nesting falcons at those sites. Forty-three sites were occupied by pairs in 2014, the highest number since the beginning of the peregrine falcon recovery program. Fifty-six percent of the nesting pairs were successful, producing 70 fledglings or 1.63 young per nest, exceeding the criteria for upgrading the state legal status of the peregrine falcon in Pennsylvania. Activities of Pennsylvania's peregrine falcons

attract the attention of the public and were well covered in the online, print and broadcast media. Thirteen birds banded in Pennsylvania, or banded elsewhere and found in Pennsylvania, in 2014. The functional population of nesting peregrines in Pennsylvania reached 15 pairs in 2014, a post reintroduction high. The project is approaching the level of recovery where the species may soon be upgraded to threatened status.

OBJECTIVES

1. To re-establish a self-sustaining peregrine falcon population in Pennsylvania.
2. The peregrine falcon is currently endangered in Pennsylvania. Recovery actions should continue to follow changes in state legal status as outlined in Pennsylvania's peregrine management plan (Brauning et. al. 2013).
3. To engage and involve the interested public in the monitoring, protection, and management of peregrine falcon.

METHODS

Peregrine falcon nesting activity was monitored in Pennsylvania during the 2014 season by the Pennsylvania Game Commission (PGC), cooperating agencies, and over 200 volunteers at more than 60 potential nest sites across the state (Fig. 1). Video cameras monitored the nest site at the Rachel Carson State Office Building (RCSOB) in Harrisburg (Department of Environmental Protection 2014), and the Gulf Tower and the University of Pittsburgh's Cathedral of Learning in Pittsburgh (National Aviary 2014). Nestling health checks and banding was overseen by Peregrine Falcon Coordinator Art McMorris.

The recovery population goal of nesting peregrines in Pennsylvania is computed to include all the cliff nests plus 25% of the nests on human structures, and the "threatened" status may be assigned upon 75% of that recovery goal.

RESULTS

Peregrine falcons occupied 43 nest sites in Pennsylvania during the 2014 nesting season (Tables 1 and 2, Figs. 1 and 2). Young fledged at 24 nests, for a success rate of 56% (Tables 1 and 2). Four new nests were established in 2014. Three were unsuccessful (one each on a bridge, cliff ledge, and at a power plant), and 1 (in a quarry) was successful. Six pairs relocated their nest sites. Two pairs returned to sites where they had nested successfully in the past, and 3 left the sites where they had nested in the previous year. Of the latter 3, 1 had been unsuccessful in 2013, its first year of nesting; 1 left a bridge undergoing repair and nested successfully on a different bridge; and 1 left a bridge where it had nested successfully in 2013 for a different bridge, and failed. The sixth pair that relocated is on a bridge that spans the Pennsylvania-New Jersey state line (the Walt Whitman Bridge on the Delaware River); in 2014, they moved their nest from the Pennsylvania side to the New Jersey side (Table 1). The number of cliff-nesting pairs increased from 4 to 6, the highest number in the recovery period. One of the 2 additional nests was new, but unsuccessful; the other was at a site that had been active previously but had been unoccupied in 2012 and 2013

(Tables 1 and 2). With all of these changes, there was a net increase of 3 occupied nests in 2014 (Tables 1 and 2). The 43 nest sites occupied by pairs throughout the nesting season in 2014 was the highest number since the beginning of the peregrine falcon recovery program (Table 1, Fig. 2).

Of the 43 occupied nests, the great majority were on man-made structures: 19 were on bridges, 14 on buildings, 2 on smokestacks and 1 on a water tower. Additionally, 1 was on a rock ledge in a quarry that has been inactive for 2 years but which may become active again at any time. Only 6 nests were on ledges on natural cliffs or in abandoned quarries (Table 3, Figs. 1 and 2).

These results compute to a recovery population of peregrine falcons of 15 viable breeding pairs in 2014; 6 nests on cliffs plus 25% of 37 nests on human structures. This is 2 viable nest sites shy of the threshold for “threatened” status.

Seventy young fledged from 24 successful nests. Productivity was 1.56 young per occupied nest (70 fledglings/43 occupied nests). Young falcons were banded before fledging whenever possible; in total, 57 were banded (Tables 1, 2 and 4).

Nesting adult falcons were identified as to age and natal site wherever possible; these are tabulated in Table 5. There were 13 band encounters of birds banded in Pennsylvania, or banded elsewhere and encountered in Pennsylvania (Table 6).

Nests in Philadelphia Area, Southeast (SE) Region

Six Delaware River bridges, 4 Schuylkill River bridges and several tall buildings in the greater Philadelphia area were monitored for peregrine falcon activity. Pairs occupied 10 sites and success was confirmed at 7, which fledged total of 24 young. One of the 10 occupied nests was new, but unsuccessful, in 2014. Philadelphia-area nests comprised 23% of the total nests in the Commonwealth and produced 34% of the fledged young (Tables 1, 2 and 4.)

Benjamin Franklin Bridge, Philadelphia County.--The Ben Franklin Bridge spans the Delaware River between Philadelphia, Pennsylvania (PA) and Camden, New Jersey (NJ). The falcons nest in a nest box placed near the top of the Pennsylvania tower by local Delaware River Port Authority (DRPA) maintenance staff. The nest was again monitored by volunteers Georgia and Barrie Ashby and several others. Four young were produced in this nest and were banded by PGC personnel on 30 May, and all 4 fledged successfully.

One fledgling was rescued after becoming grounded on the bridge roadway soon after fledging; it was released in a safe location on the bridge and was observed alive and free later in the summer. A different fledgling was found dead on the bridge deck 2 weeks after fledging (Tables 1, 2 and 4). A third fledgling was encountered later in the season when it was trapped and released at a hawk banding station in Cape May, NJ, 115 km from the nest, on 14 September (Tables 4 and 6).

Commodore Barry Bridge, Delaware County.--This nest was successful in 2014 for the second year in a row, after failures in the 2 previous years. Three nestlings were found and banded by PGC personnel on 2 June, and are presumed to have fledged successfully. The nest box that was installed by DRPA personnel during the winter of 2012-2013 was still unused; the falcons

continued to nest on a gusset plate near the catwalk under FB27, a short distance away from the nest box.

Dannehower Bridge, Montgomery County, NEW 2014.--A new nesting pair of peregrine falcons was found at the Dannehower Bridge, a steel continuous span beam bridge that carries US Route 202 southbound (Markley St.) across the Schuylkill River between Norristown and Bridgeport in Montgomery County. This is likely the same pair that has been observed wintering in downtown Norristown and irregularly along this stretch of the river since 2007. In mid-February the pair was found frequenting the bridge, and in mid-April, local volunteers identified a likely nest site on a gusset plate under the bridge deck. Incubation appeared to begin in late April, but nesting behavior ceased in mid-June with no evidence of young. On 11 August the nest was visited with the aid of a snooper craned provided by the Pennsylvania Department of Transportation (PennDOT) District 6. One abandoned unhatched egg was found, but there was no evidence that there had been nestlings.

Exelon Eddystone Generating Station, Delaware County.--Peregrine falcons have been observed at this location since 2009, and a nest was found in 2011, at an inaccessible location inside an air duct on the exterior wall of a tall building, the "crusher house." Success was confirmed for the first time in 2013, and the nest was successful again in 2014, producing 1 fledgling (Tables 1 and 2). After the end of the nesting season, a new peregrine falcon nest box was installed on the roof of the main building on 18 November, and the crusher house was demolished in late December. The new nest box provides a more favorable nest location than the air duct in the crusher house, and will allow access for banding. The falcons had a poor record of success in the air duct, and at least one nestling had died by falling out of the duct.

Girard Point Bridge, Philadelphia County.--This bridge carries Route I-95 across the Schuylkill River near the Philadelphia Navy Yard and Philadelphia International Airport. In 2014, the falcons nested in the south nest box (referring to the southbound direction; actually the west end of the bridge) and raised 3 young, which were banded by PGC personnel on 9 May, and fledged 3 weeks later.

In late June, 1 of the fledglings was found dead 4 km from the nest, killed by colliding with an aircraft at Philadelphia International Airport (Tables 1, 2 and 4).

Hospital of the University of Pennsylvania (HUP), Philadelphia County.--This nest, in an abandoned red-tailed hawk stick nest on a seventh floor ledge at the Hospital of the University of Pennsylvania (HUP) in Philadelphia, was new in 2013. Most of the stick nest was blown away during the winter of 2013-2014 but enough was left to provide a nest substrate on the sloping ledge, and 4 eggs were observed in the nest on 31 March. On 18 April, hospital workers observed a "big ruckus" at the nest. One egg was found broken on the sidewalk, only 2 remained in the nest, and the adults did not return to the nest. Only 1 adult falcon (or 1 at a time) was observed during the remainder of the nesting season.

Manayunk, St. John's Church, Philadelphia County.--A pair of peregrine falcons nested successfully for the fourth year in a row in the steeple of the Church of St. John the Baptist in the Manayunk section of Philadelphia. Four young were banded by PGC personnel on 27 May, and

All 4 fledged successfully in early June and continued to be seen by local volunteers for the next few weeks.

Pennsylvania-New Jersey Turnpike Delaware River Bridge, Bucks County.--This nest was again monitored by several dedicated volunteers led by Linda Rowan and Howard Eskin. The falcons nested in the box beam that they have used continuously since 2001. Five nestlings were banded on 15 May.

At the time of banding, throat swabs were taken from 4 of the 5 nestlings for detection of *Trichomonas*, 1 of the samples was positive, so the nest was re-visited on 21 May to treat the nestlings. Lesions were not visible but all 5 were treated orally with carnidazole, returned to the nest, fledged the second week of June, and all 5 were accounted for through the end of July.

All 5 nestlings were found to be infested with arthropod ectoparasites at the time of banding on 15 May, and were therefore dusted with 0.1% pyrethrin/1% piperonyl butoxide powder. When they were re-examined on 21 May, no ectoparasites were visible.

On 10 June, soon after fledging, 1 of the fledglings was caught in razor wire on top of a chain-link security fence at 1 of the bridge piers. The fledgling was rescued by local volunteers and taken to a wildlife rehabilitator, who found serious lacerations on the wings, legs and toes but no broken bones. The fledgling underwent lengthy rehabilitation and was released in Summit Hill, PA on 16 September (Table 4). The remaining fledglings continued to be observed near the nest until the end of July.

Philadelphia, Downtown (City Hall), Philadelphia County.--Downtown Philadelphia and vicinity were monitored with the assistance of a crew of local volunteers led by Ed Mutzer. The downtown Philadelphia pair of peregrine falcons nested in the nest box on City Hall Tower for the fourth year in a row and produced 4 nestlings, which were banded on 20 May and fledged during the first week of June.

On 16 July, 1 of the fledglings was found badly injured 3 km from the nest, apparently struck by a vehicle, and was euthanized (Tables 1, 2 and 4). The other 3 fledglings continued to be observed in the vicinity of the nest until late July. One of those 3 was sighted in Lyndhurst, NJ, 130 km from the nest, on 11 August (Tables 4 and 6).

On 21 August and 16 November, the 1.5 ton, 5-meter-tall "PNB" letters, 12 in all, were removed by helicopter from the top of the "PNB Building" immediately south of Philadelphia City Hall. The PNB building had been a peregrine falcon hack site in 1981 during the re-introduction program, and is a favorite perch site of the City Hall falcons, but the removal of the letters caused no noticeable disturbance to the falcons. The building had passed on to new owners after PNB bank had gone defunct, and the letters were in poor repair.

Temple University Medical School, Philadelphia County.--Peregrine falcons had nested unsuccessfully in 2013 at a disused building on the Temple Medical School campus. Peregrines were seen in the vicinity of the building during February and March 2014, but there was no evidence of nesting, and no peregrines were seen between 18 March and 31 October, when 1 was

seen for the first time in over 7 months. The building was scheduled for demolition, which was begun in late 2014 and was about one third complete as of the end of the year. Numerous buildings in the vicinity provide possible alternate nest sites.

Walt Whitman Bridge, Philadelphia County.--This large suspension bridge spanning the Delaware River between Pennsylvania and New Jersey has 2 nest boxes, one each on top of the PA and NJ towers, and the falcons frequently relocate their nest from one to the other. In 2014 they nested on the NJ side of the bridge. The nest results are unknown (Table 1).

Other nests in the SE Region

In addition to the 10 Philadelphia-area nests described above, there were 14 more sites in the SE Region occupied by peregrine falcons in 2014, as described below. The 24 nests in the SE Region accounted for 56% of the occupied nests and 71% of the fledged young in Pennsylvania in 2014. The concentration of tall bridges and of cities with tall buildings in the SE Region probably contributed to the concentration of peregrines in that region.

Allentown, Lehigh County.--The Allentown pair nested at the Eighth Street Bridge for 5 years from 2009-2013, and at the nearby PPL GO building 2 years prior to that. The Eighth Street Bridge began a multi-year reconditioning project in 2014, and in preparation for that, PGC, PennDOT and PPL cooperated to provide an alternative nest site for the falcons. In late 2013, a new nest box was constructed and mounted on the PPL building, where the pair had nested previously, and a camera connected to the Internet was installed for nest monitoring. The falcons were observed occasionally near the nest box, but they did not use it for nesting, and the Eighth Street Bridge was unavailable for nesting. In spite of much searching by PGC personnel and local volunteers, no nest could be found until 5 July, when a PennDOT employee observed recently-fledged young at Allentown's Tilghman Street Bridge, 2.5 km from the Eighth Street Bridge and the PPL building. PGC personnel and local volunteers confirmed the presence of the adults and 3 fledglings at this new site (Tables 1 and 2). Because the young had already fledged, they could not be captured for banding.

Bethlehem, Northampton County.--Peregrine falcons nested again in Bethlehem at the nest which was found in July 2012 at the "High House," a disused building from the old Bethlehem Steel mill which is now owned by the Sands Casino. Three nestlings were observed in the nest, which is on a horizontal steel beam high on the face of the building. Because of the height of the nest and the configuration of the building and nearby streets, railroad tracks and bridge, it was not feasible to reach the nest for banding. Local volunteers observed the nest regularly, and confirmed that all 3 nestlings fledged on 22-26 June. All 3 were observed doing well for 1 week after fledging, and at least 2 continued to be observed for 3 weeks, and there were no reports of injuries or mortalities. This was a welcome change from previous years, when many fledglings were injured or killed on the adjacent roadways and railroad tracks.

Clark's Ferry Bridge, Dauphin County.--Peregrine falcons nested for the fifth year in a row on a bridge pier under the deck of this bridge, which carries US Routes 22/322 across the Susquehanna River near Duncannon. On 5 May, PGC personnel accessed the nest via a snooper crane generously provided by PennDOT District 8, and banded 3 nestlings. At least 2 were

confirmed to have fledged 4 weeks later, and continued to be seen by local volunteers in the ensuing weeks, either in the vicinity of the bridge or nearby above the ridge of Peter's Mountain.

The falcons continued to nest under the deck on top of pier EB-8 for the third year in a row, despite its proximity to the walkway which carries the Appalachian Trail and other pedestrians across the bridge. The falcons would aggressively challenge pedestrians during the nesting and fledgling periods. This caused various reactions among the pedestrians. A local Appalachian Trail volunteer posted a sign on the walkway with information about the falcons and the PGC peregrine falcon coordinator's contact information. As a result, many walkers were informed about peregrines, and reported their sightings to PGC.

Columbia, Lancaster County.--This pair was monitored by a group of local volunteers led by Meredith Lombard. The falcons nested again under the deck of the Pennsylvania Route 462 Bridge over the Susquehanna River. The nest was visited by PGC personnel on 31 May, and 3 nestlings were banded.

In previous years, the nest was accessed by climbing onto the bridge understructure and walking and climbing along the concrete arches under to the deck to the nest site. The river is over 1.5 km wide at this point, so this required a significant amount of time and physical effort. This year, Harcon Bridge Access Services, located in Paradise, PA, offered the use of their "bucket boat" to access the nest. This ingenious device is basically a bucket truck, but mounted on a boat instead. PGC personnel were lifted up to the nest from the river below, and the entire operation went forward with a minimum of time and effort.

Because the various nest locations used by the falcons are far from either riverbank, fledglings have often ended up "grounded" in the river, and have been rescued by volunteers in boats. Local volunteers again organized a "fledge watch" to verify fledging and make rescues if needed. Two nestlings were rescued from the river soon after fledging on 10 June and released. One of the two was rescued from the river a second time on 12 June, rehabilitated, and released 20 June; and then was found injured in Sunbury, 80 km away, on 29 June. The injured bird was taken to a wildlife rehabilitator but died. The third nestling was never seen after fledging, despite much observer effort, and is presumed to have perished in the river (Tables 1, 2, 4 and 6).

Cromby Power Station, Chester County, NEW 2014.--During the fall and winter of 2013-2014, local observers reported seeing a pair of peregrine falcons at several locations along the Schuylkill River in northern Montgomery and Chester counties. As the winter wore on, the focus of activity was traced down to the decommissioned Exelon electric generating station on Cromby Road in Phoenixville, Chester County. The falcon pair was observed on territory at the Cromby plant through early June. PGC personnel searched the power plant from the ground and from the rooftops of plant buildings on 11 and 17 April but no nest could be found, and no young were observed during the rest of the season.

The Cromby Power Station was retired from service in 2011, but as of this writing, its eventual disposition has not been decided. A PECO Energy substation is still in service on the grounds of the Cromby power plant.

Delaware Water Gap, Northampton County.--Peregrine falcons have been observed at the Mount Minsi Cliff, a historic nest site, since at least 2003, and have nested on multiple occasions, but nesting has not yet been successful in the post-DDT era (Tables 1 and 2). The height of the cliff and distance from suitable viewing sites makes monitoring difficult, but local observers Brian Hardiman, Rick Wiltraut, Jim Thomson, Allan Ambler and Tim Kita provided excellent coverage. In recent years, the Delaware Water Gap National Recreation Area has closed the cliff to rock climbing during the nesting season to avoid disturbance to the falcons.

This year the falcons nested in an abandoned common raven nest on the cliff, and there were high hopes of success when a nestling was observed in the stick nest on 19 May. A PGC technical rope team visited the nest on 6 June and retrieved the nestling for banding, but the nestling was found to have a broken right wing that was calloused and healing badly. Additionally, a piece of string was wrapped tightly around the nestling's left tarsus. Except for the broken wing, the nestling appeared to be in good health. The string was cut off, and the nestling was taken to the Delaware Valley Raptor Center for rehabilitation; but it is very unlikely that the wing will heal well enough that the falcon can be released, and so it was not banded. Because the nestling did not remain in the nest to the age of fledging, the nest is designated as "Active" but not "Successful" (Tables 1 and 2).

A likely explanation for the findings is that the string that had gotten wrapped around the nestling's tarsus was a piece of trash that the ravens had incorporated into their nest, and that the young falcon had gotten its wing caught in a similar piece of debris in the nest and had broken its wing while struggling to get free.

French Creek State Park, Berks County.--This nest is on a cliff ledge in an abandoned quarry in French Creek State Park. The nest was successful in 2011, but failed in 2012 and 2013, possibly due to predation by Great Horned Owls. This scenario apparently repeated itself in 2014. At first, nesting proceeded normally, and 2 downy chicks were observed on the nest ledge starting on 19 May. However, on 27 May, the chicks were suddenly gone, and the adults were acting very agitated. On 8 June the adults appeared to start re-nesting, but no young were observed during the rest of the season.

Harrisburg, Rachel Carson State Office Building (RCSOB), Dauphin County.--The Harrisburg nest has continued to be productive every year since its first success in 2000. PGC and the Pennsylvania Department of Environmental Protection (DEP) partner to manage this site, and DEP provides a camera connected to the Internet which allows the public to observe the nesting falcons in real time (DEP 2014). Four eggs were laid, all 4 hatched, and the nestlings were banded on 13 May at an event attended by an overflow audience of 170 students and teachers from area schools and broadcast on local TV and live webcast. The nestlings fledged 28 May - 3 June.

The DEP again organized a group of volunteers to do a "fledge watch" during the first 2 weeks of fledging. There were 4 rescues of 3 fledglings that became grounded on the street or elsewhere soon after fledging (Table 4); this is about average for this location. On 7 June a fledgling that had been successfully rescued 10 days previously was found dead near the nest, apparently due to collision with a building (Tables 1, 2 and 4).

Lancaster, downtown, Lancaster County.--Peregrine Falcons have been observed in downtown Lancaster since at least 2006, originally at the Griest Building and then at the recently-constructed Marriott Hotel on South Queen Street, but successful nesting has not yet been documented. Although a territorial pair was present throughout the 2013 nesting season, and there were occasional sightings of peregrine falcons during the spring and fall of 2014, the site was unoccupied during the bulk of the 2014 nesting season (Table 1).

Martin's Creek PPL Power Plant, Martin's Creek, Northampton County.--Peregrine falcons again bred successfully at this nest for the tenth year in a row. The nest box, mounted 110 m above the ground on a 180-m smokestack at the Martin's Creek PPL Power Plant, is monitored by PPL employees Jack Hahn and Scott Hahn. Five eggs were laid and 2 hatched. The young were banded on 12 June and fledged in early July.

Norman Wood Bridge, Lancaster County.--The Norman Wood Bridge (Pennsylvania Route 372 and the Susquehanna River, Lancaster County) was again occupied by a territorial pair throughout the nesting season, but no evidence of young was ever observed. Pairs have occupied the bridge almost every year since 2009 and eggs have been laid during several of those years, but young have never been observed (Table 1).

Reading, Downtown, Berks County.--This pair nested on a balcony of a building in downtown Reading for the seventh year in a row, after nesting once (2007) on a different building just 200 m away. Four eggs were laid during the first week of April, and all hatched.

PGC visited the nest for banding on 27 May. Three nestlings were banded, but the fourth died during handling. The carcass was sent for necropsy, but the findings were inconclusive.

There has been a history of trichomoniasis at this nest: several young falcons have died of the infection in recent years; and other have been found to be infected, were treated, and survived. This year, 1 of the nestlings exhibited early signs of *Trichomonas* infection upon visual examination on the day of banding. Oral swabs for *Trichomonas* testing were then taken from all the nestlings (except the 1 that had died), and all were treated orally with 10 mg of carnidazole and returned to the nest. All 3 oral swabs tested positive for *Trichomonas* after only 1 day of culture. The nestlings were re-examined twice over the following 10 days: lesions disappeared from the 1 that had initially shown lesions, and no lesions developed in the other 2; and all 3 continued to thrive, and fledged successfully in mid-June.

One of the fledglings was found injured on the sidewalk shortly after fledging, apparently as a result of a collision with a building or vehicle. It was taken to a wildlife rehabilitator where it underwent treatment for 7 days, and was then released back at the nest site (Table 4).

Dedicated volunteer Shawn Walb monitored the nest throughout the nesting season, as he has done every year since the peregrines first arrived in Reading. PGC and Pennsylvania's falcon enthusiasts lost a true friend when Shawn lost his battle with cancer in November.

Safe Harbor, Lancaster County.--A pair of peregrine falcons was observed at Safe Harbor throughout the nesting season but no nesting was observed.

Scudder Falls Bridge, Yardley, Bucks County.--This nest is on the catwalk of the bridge that carries I-95 over the Delaware River from Lower Makefield, Bucks County, PA to Ewing Township, NJ. The bridge was searched by PGC personnel on 19 May with the aid of a snooper crane generously provided by the Delaware River Joint Toll Bridge Commission (DRJTBC). The entire length of the bridge was searched, but no eggs or young could be found. The adult male that has resided at the bridge since 2008 was present, acting aggressively territorial over most of the length of the bridge, but no female was observed. Two adult peregrines were seen at the bridge as late as 26 March and then again beginning 10 October, but only a single peregrine was seen between those dates (Table 1).

Talmage Quarry, Lancaster County, NEW 2014.--In July, mining inspectors from Pennsylvania DEP visited Talmage Quarry and observed 5 peregrine falcons. This information was relayed to PGC and local volunteers who visited the site on 31 July and 18 August and confirmed the presence of 2 adult and 3 juvenile peregrine falcons, and identified the nest site, an abandoned common raven stick nest on a quarry wall.

Talmage quarry is a limestone quarry that supplies materials primarily for road building. The owners reported that it had been essentially inactive for two years, but could be expected to go back into production in the near future, perhaps as early as 2015. The effects of renewed blasting, trucking, and other quarrying activities on the falcons and their nesting behavior can only be conjectured.

We list Talmage Quarry in a new category, “active quarry,” in the list of nest types, under the heading of “man-made structures,” because of the threats that human activities expose the falcons to at those sites (Table 3, Fig. 1). The only other quarry nest in PA, at French Creek State Park, is a long-abandoned quarry that will not be re-activated. It is listed as a “cliff” under “natural sites” because its physical characteristics and the relative absence of human activity resemble natural cliffs.

Three Mile Island, Middletown, Dauphin County.--Nesting activity at the Three Mile Island (TMI) nuclear power station continued in 2014. Two young were produced at an inaccessible location near the top of the #1 reactor containment building. The 2 nestlings fledged on 9 and 10 June, and both became grounded and trapped in small enclosed areas soon after fledging. With advice from PGC over the telephone, plant personnel rescued both fledglings and released them on rooftops near the nest. PGC personnel were not available in time to band the fledglings before they were released.

Wade Bridge, I-81 and the Susquehanna River, Dauphin County.--No peregrine falcons were observed at the bridge in 2014. Extensive bridge repairs that had been in progress for several years were completed by the beginning of the year.

Northeast (NE) Region Nests

There were 6 peregrine falcon nests in the NE Region in 2014: 3 on cliffs, and 1 each on a bridge, building, and smokestack. Two of the 6 were successful. The 3 cliff nests in the NE Region, all in Luzerne County, represent half of the cliff nests in Pennsylvania.

Luzerne County Cliff, Luzerne County.--This nest is on a cliff in Luzerne County at a location which is undisclosed at the landowner's request. This and the other 4 Luzerne County nests were monitored by volunteer Bob Wasilewski.

PGC personnel placed a trail camera on the nest ledge in October 2013 and retrieved it in September 2014. Photographs confirmed that the adult male was the same male that had been there since at least 2008 and probably 2007. Photographs from December 2013 allowed a partial band reading from the female. The partial reading was enough to determine that she was from a Pennsylvania nest, but her natal site and date could not be determined (Table 5).

In April, there appeared to be a new female at the site, replacing the previous female. The male and the apparently-new female remained on territory for the entire nesting season, and copulation was observed, but incubation was not observed and there was no evidence of young.

Montour PPL Power Plant, Montour County.--The falcons nest in a nest box mounted on the decommissioned #2 stack at the Montour PPL Power Plant near Washingtonville. Although the height of the nest makes viewing difficult, and access for banding impossible, PPL employee Jon Beam was able to observe 2 nestlings which fledged successfully on 21 June.

Pittston/Duryea, Campbell's Ledge, Luzerne County.--A pair has nested in this location since 2002, but the nest site has shifted back and forth between a bridge in Pittston and 3 different ledges on the Campbell's Ledge Cliff in Duryea, 3.5 km to the north. In 2014 the falcons nested at the Campbell's Ledge cliff for the sixth year in a row. The previous nesting female was replaced by a new, unbanded adult female, that was first seen in mid-April. Two nestlings were found on the nest ledge and banded by PGC personnel on 28 May. However, 3 days later, the nestlings had disappeared from the nest ledge, possibly due to predation by an avian predator (Tables 1, 2 and 4).

Scranton, downtown, Lackawanna County.--In 2014 the peregrine falcon pair that had nested at St. Luke's Episcopal Church the previous year relocated their nest 1 city block away to the Electric City Building in downtown Scranton. As they had done at the church, the pair chose a rain gutter as their nest site. Nesting appeared to be progressing normally, but nesting abruptly stopped in late May. PGC personnel searched the site in early June and found the broken remains of an egg that had washed out of the nest, through a short downspout and into a lower rain gutter.

Tilbury Knob, Luzerne County, NEW 2014.--The Tilbury Knob cliff is located approximately 1 km northeast of West Nanticoke in Luzerne County. Volunteer Bob Wasilewski has been watching the cliff for evidence of peregrine falcons for at least 7 years and has observed single peregrines on occasion since 2011. The first evidence of nesting was observed in March 2014, when Mr. Wasilewski observed a pair apparently making a scrape on a cliff ledge. The pair appeared to be incubating from early April through mid-June, twice the normal incubation period, when they finally abandoned their failed nesting attempt. At least 1 adult continued at the site until July.

Wilkes-Barre, Luzerne County.--After nest failures in 4 successive years, the Wilkes-Barre

pair succeeded in raising 1 young in a nest under the deck of the Market St. Bridge. The male nestling was banded by PGC personnel on 11 June with the assistance of PennDOT District 4, who provided a snooper crane and crew to reach the nest. The nestling fledged 3 days later, and was observed flying well for 4 weeks after fledging.

South Central (SC) Region Nests

Brunner Island PPL Plant, York County.--There was 1 nest in the SC Region in 2014, at PPL's Brunner Island Steam Electric Station in York Haven. Peregrine falcons nested successfully for the fifth consecutive year atop a coal silo at this coal-fired power plant. Four eggs were laid and 2 hatched, and both young falcons fledged. The nest is inaccessible, but plant workers were able to view and photograph the nest from a small hole in a steel fascia wall.

North Central (NC) Region Nests

Four nest sites were occupied in the NC Region and a fifth remained unoccupied for the fifth year in a row. One of the occupied nests was successful, producing 2 young.

McElhattan Bridge, McElhattan, Clinton County.--This pair relocated from the State Route (SR) 1005 (McElhattan Drive) Susquehanna River West Branch bridge to the next bridge downstream: the US Route 220 bridge, 2.5 km to the east. The falcons nested on a pier top under the bridge deck. The nest was visited for banding on 22 May with the aid of a snooper crane provided by PennDOT District 2. One cold, wet, abandoned unhatched egg was found in the nest, which was directly under a leaky joint between 2 deck sections. The egg had apparently gotten chilled by rainwater draining through the deck joint. If any additional eggs had been present, they had apparently washed away.

Montgomery Cliff, Lycoming County.--After being unoccupied for 2 years, this site was again occupied during the 2014 season by a pair of peregrine falcons. The pair, an adult female and a juvenile male, were observed, exhibiting territorial behavior, from mid-March through mid-June at various locations along the cliff, including at a possible nest ledge, but there was no evidence of eggs or young.

Muncy, Lycoming County.--This nest, on the PA Route 405 Bridge over the Susquehanna River West Branch, was successful for the third year since it was discovered in 2012. As they did in 2013, the pair first appeared to be incubating near the west end of the bridge, and then relocated to the east end for what appeared to be a second nesting attempt. PennDOT District 3 generously provided a snooper crane to visit the eastern nest site on 3 occasions. On the first visit, the female was found to be incubating 3 eggs. On the second visit, 2 nestlings and 1 unhatched egg were found, but the nestlings were too young to band. The 2 nestlings were banded on the third visit, on 18 July; the unhatched egg was no longer present. Both nestlings were observed in the nest up to the age of fledging, and 1 was observed flying near the nest in mid-July.

Shikellamy Cliff, Union County.--PGC personnel and a local volunteer searched this site but were unable to find any evidence of occupancy. The site was last occupied in 2009.

Williamsport, Market St Bridge, Lycoming County.--The bridge, which spans the Susquehanna River West Branch, was occupied by a pair of peregrine falcons throughout the

nesting season, but active nesting was not observed. The adult male from 2013, identified by his leg bands, and an adult female believed to be the same one from 2013, based on plumage and behavior, were observed at the bridge in January and February 2014. Then a new, unbanded juvenile female appeared on 8 March. Both females were seen with the male on alternate occasions for the next few weeks, and the male copulated and shared food with both. Adding to the drama, a new male appeared briefly in mid-March, but was chased away by the resident male. The original female was last observed on 20 March. The original male and the new, juvenile female remained at the bridge through the rest of the nesting season, but there was no evidence of eggs or young.

Southwest (SW) Region Nests

Eight nest sites were occupied by pairs of peregrine falcons in the Southwest Region in 2014. Two were on buildings, 1 was on a water tower, and 5 were on bridges in and near Pittsburgh, the “City of Bridges.” Four of the 8 nests were successful, fledging a total of 13 young; 2 others had an eggs or nestlings but did not raise young to the age of fledging.

Glenfield, I-79 Ohio River Bridge, Allegheny County.--Peregrine falcons nested for the third year under the catwalk of the bridge that carries Interstate 79 across the Ohio River from Neville Island to Glenfield. This year the falcons moved their nest to a location very close to the Neville Island end. One nestling was observed in the nest; it was banded by PGC personnel on 28 May. However, the nestling was last seen 1 week before the expected date of fledge and was never seen again, despite much effort by local observers.

Greentree Water Tower, Allegheny County.--This nest was new, but unsuccessful, in 2013. One peregrine was observed at the site starting at least in January 2014, and a pair was present starting in early March, when both adults were recognized to be different birds than those that had been present the previous year. Nesting appeared to progress normally until mid-May, when it stopped abruptly. Only single peregrines were observed, sporadically, for the rest of the season.

McKees Rocks Bridge, Allegheny County.--Good locations for observing this Ohio River bridge are few, and access is limited, making monitoring a challenge. Nevertheless, local observers confirmed that a pair of peregrine falcons was present during the nesting season, and appeared to be nesting under the bridge deck. When PGC personnel visited the bridge for banding on 22 May with the aid of a snooper crane provided by PennDOT District 11, both adult falcons were observed but no eggs or young could be found. The adult male is now 15 years old, so turnover at this site may occur soon.

Monaca, Beaver County.--In 2014, peregrines falcons returned to the Monaca-East Rochester Bridge (PA-51 and Ohio River) after nesting for 1 year on the nearby Pennsylvania and Lake Erie Railroad bridge. PGC personnel visited the nest on 21 May and banded 4 nestlings, which fledged successfully 3 weeks later. At least 3 fledglings were observed flying with their parents for at least the following week.

Pittsburgh, downtown, Allegheny County.--The downtown pair of peregrine falcons returned to the Gulf Tower in Pittsburgh in 2014 and nested successfully, after nesting at an alternate location the previous 2 years. A camera connected to the Internet, provided by the National Aviary, allows the public to observe the nesting falcons (National Aviary, 2014). Five

eggs were laid and all 5 hatched, and the nestlings were banded by PGC personnel on 20 May. All 5 fledged successfully and were observed by local enthusiasts during the ensuing weeks.

There was a sight record of 1 of the fledglings, alive and free, in North Ridgeville, Ohio on 16 October (Tables 4 and 6).

Pittsburgh, University of Pittsburgh Cathedral of Learning, Allegheny County.--The pair at the University of Pittsburgh's Cathedral of Learning in the Oakland section of Pittsburgh nested again in the nest tray on the fortieth floor. This pair and the Gulf Tower pair were monitored by a crew of local enthusiasts led by Kate St. John, who also plays a leading role in coordinating activities at other Southwest Region sites. As at the Gulf Tower, a camera connected to the Internet, provided by the National Aviary, allows the public to observe the nesting falcons (National Aviary, 2014).

The adult female peregrine is 15 years old and appears to be near the end of her reproductive life. On 20 March she laid her first egg, but then appeared listless and did not incubate or shelter the egg even when temperatures dipped below -7 C. She appeared to be egg-bound, and on 30 March she expelled the broken remains of an egg (yolk and pieces of shell). No additional eggs were laid, and the one egg was never incubated. The nest failure ended a string of 12 straight successes.

On several occasions, a new female was observed, apparently attempting to challenge the 15-year-old resident female for possession of the territory, but in each case the new female was chased away by the resident male, thereby delaying succession.

Tarentum Bridge, Allegheny and Westmoreland counties.--The Tarentum Bridge pair of peregrine falcons nested again in a hole in the lower chord box beam of the Tarentum Bridge, which carries Pennsylvania Route 366 across the Allegheny River between Tarentum, Allegheny County and New Kensington, Westmoreland County. The nest beam with its exit hole which faces downward, towards the river, provide a poor place for nesting and fledging. The nest was visited by PGC personnel on 22 May with the use of a snooper crane provided by PennDOT District 11. Two nestlings of near-fledging age were found and banded, and then were placed on a nearby pier, rather than back in the nest, to give them a better chance of fledging successfully. Both fledged 3 days later, but 1 disappeared soon thereafter and was never seen again, despite much observer effort. The remaining fledgling continued at the site for 6 weeks after fledging.

Peregrines have nested at the Tarentum Bridge for 5 years, with only occasional success; the nest failures are probably due to the unsuitable site in the bridge structure that the falcons have chosen for nesting. To remedy the situation, PGC is in discussion with PennDOT about the possibility of placing a peregrine falcon nest box on a nearby pier of the bridge.

Westinghouse Bridge, Allegheny County.--The George Westinghouse Memorial Bridge carries US Route 30 across Turtle Creek from East Pittsburgh to North Versailles in Allegheny County. PennDOT District 11 again provided a snooper crane to reach the nest. When the nest was first visited for banding on 20 May, the female was found to be incubating 3 eggs. PGC personnel returned to the nest on 1 July and banded 2 nestlings and collected the third egg, which had not

hatched. The 2 fledged in late July, and at least 1 continued to be seen until mid-August.

One fledgling was recovered injured in Columbus Ohio in early September (Tables 4 and 6). The bird is now in a wildlife rehabilitation facility.

Northwest (NW) Region Nests

Erie, Donjon Shipbuilding, Erie County.--One nesting pair was observed in the NW Region. A pair of peregrine falcons was documented, for the second year, nesting on a high beam inside the Donjon Shipbuilding Building in the Bayshore area of Erie. The Donjon building is a very large building where ships are built, and has industrial-size doors that are always left open. When not nesting, the falcons are often found at the freestanding Penelec smokestack nearby. Local volunteers and personnel from Donjon and PGC observed the pair of falcons at the stack and then at the Donjon Building throughout the nesting season. The pair appeared to nest at 1 location high in the Donjon Building, fail, and re-nest at another location in the building. Young falcons were never definitively observed.

Other sites

Peregrine falcons were observed with some regularity at a number of additional sites, but without confirmed evidence of nesting. In some cases the site is most likely used only for wintering or foraging; in other cases, the regularity or timing of the falcons' presence suggests nesting may occur, either in the future or undetected at the present. All areas are being monitored by local volunteers and PGC personnel, and most have been thoroughly searched on 1 or more occasions. The following is a list of such sites:

Delaware River Route 202 Bridge, north of New Hope, Bucks County, SE Region.

Easton, Northampton County, SE Region. Downtown and riverfront.

Etna, 62nd Street Bridge, Allegheny County, SW Region. Nesting was confirmed at this location once in the past: eggs were laid in 2007 but were washed out in a storm. A nest box has subsequently been installed.

Johnstown, Cambria County, SW Region. Downtown, First National Bank and vicinity.

Kittanning, Armstrong County, SW Region. Graff Bridge and vicinity.

New Holland, Lancaster County, SE Region. Two water towers.

Nockamixon Cliff, Bucks County, SE Region. Cliff overlooking the Delaware River near Kintnersville.

Peach Bottom, Lancaster and York counties, SE Region. Vicinity of the Peach Bottom Atomic Power Station on the Susquehanna River in Peach Bottom Township, York County.

Philadelphia, 2400 Chestnut Street, Philadelphia County, SE Region. Tall building overlooking the Schuylkill River, with nest box installed on the roof.

Quarries – various locations state-wide.

Rankin Bridge (George Rankin Jr. Memorial Bridge), Allegheny County, SW Region. Steel bridge crossing the Monongahela River from Braddock Ave. in Rankin to Kennywood Blvd. on the opposite bank.

Raymondskill Cliff, Pike County, NE Region. Cliff overlooking the Delaware River, 2-3 km south of Milford.

Sewickley Bridge, Allegheny County, SW Region. Steel truss bridge carrying River Street (SR4025) across the Ohio River at Sewickley.

Productivity

A total of 43 sites were known to be occupied by peregrine falcons during the 2014 nesting season. Thirty-five of those pairs (81% of total) laid eggs; and 24 pairs (56%) were successful, producing fledglings (Tables 1 and 2). Four nests were new in 2014, and one of them was successful.

A total of 70 young fledged, for a productivity figure of 1.63 fledglings per occupied nest (Tables 1 and 2). The distribution of nests and young produced by nest type (bridge, building, smokestack, water tower, active quarry and cliff; Table 3) is too small to allow statistical comparison of productivity by nest type.

Young were confirmed lost as nestlings (6), as pre-dispersal fledglings (6) and as post-dispersal fledglings (1), as discussed above. Many more losses undoubtedly occurred at all stages without being detected, especially post-dispersal, so the figures given here should be taken as minimums.

Nineteen unhatched eggs were found at 12 nests in 2014 (Table 2), and were collected for contaminant analysis. As with undetected losses of nestlings, it is most likely that there were additional unhatched eggs that went undetected because they were lost before the nest was visited for banding, or were never observed at failed nests that were not visited for banding. Indeed, eggs that were observed during early nest visits were sometimes absent when the nest was visited later.

Mortality, and Rescues, of Fledglings and Nestlings

Peregrine falcons are occasionally rescued from life-threatening situations, especially during the first few days after fledging, when their flight is neither strong nor skillful and they frequently have difficulty maintaining altitude or finding a place to land, and when they are naïve to hazards such as vehicles and window glass. “Fledge watches” are organized at some sites; these range from well-manned efforts where volunteers monitor and perform rescues as needed from sunup to sundown for a week or longer around the time of fledging, through all degrees of lesser effort. Rescue entails extracting a falcon from a life-threatening situation (e.g. grounding on a city street or in the river) and returning it to a safe place or, if warranted, taking it to a licensed wildlife rehabilitator. The extent of fledge-watch effort is determined primarily by the size of the dedicated volunteer base at a given site, and by the site’s accessibility to would-be rescuers. Particularly intensive fledge watches are organized at the nests in Harrisburg, Pittsburgh, the PA/NJ Turnpike Bridge, Columbia, Philadelphia City Hall, Williamsport, Bethlehem and Glenfield. At the majority of nest sites, observation is limited to occasional monitoring visits, with no organized fledge watch, and fledgling deaths undoubtedly occur without being documented.

There were 12 rescues of 10 peregrine falcons during the immediate post-fledging period, as summarized in Table 2 and detailed in the nest site descriptions and in Table 4 (2 rescues, at the Three Mile Island nest site, are not mentioned in Table 4 [banding records] because nestlings were not banded at that site due to inaccessibility of the nest). All of the rescues were at nests on man-made structures, and all rescues were from hazards related to the immediate environment of the man-made structure. The rescues were of birds grounded on roadways or sidewalks or in enclosed

spaces from which they could not escape (7 rescues), “grounding” in the river below the nest (3), grounding on a sidewalk after an apparent collision (1), and entrapment in razor wire (1). All 10 rescued fledglings survived, although 2 died later due to unrelated incidents. These 10 rescues represent 14% of the year’s production from Pennsylvania nests which would have died if they had not been rescued.

Six nestlings were documented to have died before fledging, and 7 fledgling deaths were documented, 6 before and 1 after dispersal from the nest site. These are described above and are summarized in Tables 1, 2, 4 and 6. Additional mortality undoubtedly occurred at all stages without being documented.

Four nestling deaths were believed to be due to predation, apparently by great horned owls; these occurred at 2 cliff nests that are believed to be inaccessible to non-avian predators. Two nestlings died of unknown causes, 1 at a bridge and 1 at a building. The 6 nestling deaths represented 8% of the 77 known nestlings.

One fledgling died as a result of a vehicle strike after dispersing 80 km from the nest. Six died prior to dispersal from the nest site; all of these were at nests on man-made structures, and all deaths were due to causes related to the immediate environment of the man-made structure. Two disappeared immediately after fledging from bridge nests, and were presumed drowned; and 4 died of collisions: 2 with vehicles, 1 with a building and 1 with an airplane.

Adding up the number of fledglings that died near the nest (6) and the number of rescues (12), and correcting for the number that were rescued twice or that were rescued and then died before dispersal (3), 15 fledglings either died, or would have died but were rescued, before dispersal from the nest. These were all at nests on man-made structures, and all were caused by hazards of the man-made nest site or its immediate environment. These 15 actual or averted deaths represent 21% of the production from Pennsylvania’s nests in 2014. These numbers reflect only the deaths or rescues that were documented. Additional deaths undoubtedly occurred without being detected; fledglings often go unaccounted-for after fledging, and their fate is unknown. A study of a much larger data set in the eastern U.S. and Canada documented that 50% of fledglings at urban nests die, or potentially die but are rescued, due to hazards found in the urban environment; this is in excess of mortality due to “natural” causes (e.g. starvation, predation, storms, etc.) (Gahbauer et al. 2015).

Banding

Fifty-seven nestlings were banded at 19 of the 24 productive nests (Table 4). When nestlings were not banded, it was because the nest was inaccessible or the nest location was not discovered in time. Nestlings were banded with a U.S. Fish and Wildlife Service (USFWS) band and a color-coded alphanumeric auxiliary band that can be read on a free-living bird with binoculars or in a photograph (Table 4). The latter band greatly increases the chance of the bird being identified subsequently.

Egg Contaminant Analysis

Whenever possible, unhatched eggs found during banding visits (i.e. 20-30 days after expected hatch) were collected, stored at -20°C, and shipped to a collaborating laboratory for

contaminant analysis. A preliminary report of the findings has been published (Chen et al. 2014) and further analyses are ongoing.

Trichomoniasis analysis

All nestlings are visually inspected for evidence of *Trichomonas* infection during the routine medical examinations performed during the banding visit. Trichomoniasis in young falcons is fatal if not detected and treated early. In 2014 we entered into a collaboration with Drs. Richard Gerhold and Kate Purple of the University of Tennessee to screen for *Trichomonas* by culturing throat swabs from young falcons, to allow detection and treatment at the earliest stages of disease. We tested 20 nestlings at a representative sample of nests: on bridges, buildings, smokestacks and cliffs; in urban, suburban or rural settings; and at various geographic locations in Pennsylvania. As detailed above, 4 nestlings from 2 nests proved to be positive for *Trichomonas*. Only 1 of these was positive by visual inspection. Because nest-mates share food and receive it from the mouths of the same parents, which might be harboring a low-grade infection, all nest-mates of infected nestlings are at risk of becoming infected. Therefore we treated all 8 nestlings at those 2 nests with carnidazole, and all 8 survived to fledging and were observed, flying well, for days or weeks after fledging, long after they would have been expected to succumb if left untreated. These 8 fledglings represent more than 10% of the year's production.

The nestlings that were tested by throat swab and culture and were negative for *Trichomonas* were at Philadelphia City Hall (4 nestlings), PA/NJ Turnpike Delaware River Bridge (3 of 4 nestlings tested were negative), Campbell's Ledge cliff (2), Columbia Rte. 462 bridge (3), Delaware Water Gap cliff (1), Wilkes-Barre Market St. bridge (1) and Martin's Creek power plant (2).

Parental Birds

Nesting adult peregrine falcons were identified wherever possible. Table 5 lists the data for the falcons at the 43 Pennsylvania nests.

Of the 86 adults nesting in PA in 2014, 37 individuals (43% of the total) were identified by their leg bands. Thirty-six of the 37 had been banded as nestlings, and therefore their origin was known; whereas 1 arrived in PA as an unbanded adult and was banded in its nesting territory (Table 5). Partial band information was obtained for 12 nesting adults (14%); of these, 1 bird, a female, was identified as fledging from a PA nest but the exact location or date could not be determined (Table 5, footnote i). Twenty-two adults (26%) were not banded, and no information could be obtained for the remaining 15 birds (17% of the total).

Very little turnover of nesting adults was observed in 2014. Of the 38 nests (with 76 adults) that were occupied in both 2013 and 2014, 8 of the nesting adults (11% of the total) were confirmed to be different in 2014 than in the previous year. The nesting adults that were confirmed to be different in 2014 than in 2013 were: the Bethlehem male, the Commodore Barry female, both adults at the Greentree Water Tower, the Luzerne cliff female, the Campbell's Ledge female, the Reading female and the Williamsport female (Table 5). Naturally, all of the adults at nests that were new in 2014 were new.

Conversely, 29 adults (38% of 76 adults) were positively identified by their leg bands in

2014 to be the same individuals that nested at the site in 2013, and 10 more (13%) fit the same description as the previous year's birds with regard to banding status and other criteria such as plumage and behavior. In total, 11% were confirmed to be new in 2014, 51% (38% + 13%) were confirmed or believed to be the same, and the remaining 38% were not known to be either the same or different. Further details are given above in the nest site summaries.

Extrapolation from these observations (11% turnover vs. 51% non-turnover) would predict that nesting adults turn over, on average, every 5.6 years. However, the data set is too small for this figure to be statistically significant.

The 23 adult females nesting in Pennsylvania with known origins fledged from nests in 7 U.S. states: 7 from Pennsylvania, 4 each from Ohio, New Jersey and Virginia, 2 from New York, and 1 each from Massachusetts and Wisconsin. In contrast, the 15 nesting males with known origins came from fewer and closer locations: 12 from Pennsylvania, 2 from Ohio and 1 from Maryland (Table 5). These findings are consistent with the pattern, observed in many avian species, that females tend to disperse greater distances than males.

Band Encounters

There were 13 band encounters recorded in 2014 of peregrine falcons banded in Pennsylvania and re-sighted after dispersal from their natal site, or banded in other states and re-sighted in Pennsylvania. Two of these were delayed reports of re-sightings in prior years, and the remaining 11 were of re-sightings in 2014. Eleven of the re-sighted birds had been banded in PA, and 2 had been banded elsewhere (in Delaware and New York). All had been banded as nestlings. Eight were females and 5 were males. In addition, 6 birds banded in PA were found dead within a few weeks of fledging before dispersing from the nest site; these are indicated in Tables 2 and 4 but are not included in the band encounters shown in Table 6.

Of the 11 encounters of birds banded in PA, 1 was a delayed report of a bird banded in 2006 and re-sighted in 2008. The remaining 10 encounters of PA-banded birds were in 2014; they were of birds that had been banded in 2007 (1 bird), 2010 (1), 2011 (1), 2013 (2) and 2014 (5). The locations of the 11 re-sightings were all either in PA or in states bordering PA: 3 each were in PA, Ohio and NJ, and 1 each was in New York or West Virginia. Only 1 of the 5 birds that were banded in PA in 2014 and re-sighted the same year was re-sighted in PA: it was found injured after being hit by a vehicle 80 km from its nest, and died in rehab.

Of the 11 birds banded in PA, 6 were alive upon re-sighting, 3 were found injured (1 later died) and 2 were found dead. A further breakdown is as follows. Of the 6 birds that were alive, 3 were sight records of birds that were alive and free, 1 was caught and released at a hawk banding station, and 2 were nesting. One of the nesting birds was successful, and the nesting results of the other are unknown. Of the 3 that were found injured, 1 died soon after being found, 1 was rehabilitated but is unreleasable and is in captivity as an education bird, and 1 was rehabilitated but its present condition is unknown. Two were found dead; those 2 plus the 1 that died in rehab make 3 that ultimately died.

The 2 birds that were banded in other states and re-sighted in PA were both found dead after being hit by airplanes. One was banded in Wilmington, Delaware in 2013 and found dead 4

months later at Lehigh Valley International Airport, Allentown; and the other was banded in Buffalo, New York and found dead 5 months later at Philadelphia International Airport, Philadelphia.

The time interval between banding and re-sighting varied between a minimum of 2 months and a maximum of 6 years 8 months.

Construction and Maintenance Activities at Nest Sites

Since 36 of the 43 nests are on man-made structures and one is in a quarry, human activities are the most likely source of disturbance. Some human activity is routinely present and unavoidable (e.g. vibration and traffic noise on bridges); falcons have shown their acceptance of those activities by nesting at those sites. In other cases, specific projects or activities such as construction or maintenance present the possibility of unacceptable disturbance. Such activities may harm both falcons and people. Harm to the falcons may include injury, nest failure or abandonment. Harm to people may include harassment or injury of workmen by aggressive falcons. The PGC maintains a dialog with personnel at all sites used by falcons so that activities can be designed or scheduled to minimize human-avian conflicts. Activities such as bridge inspection, lighting maintenance, minor repairs, etc. are routinely coordinated with PGC. Larger projects require more extensive coordination. Major projects include the following:

Allentown, 8th Street Bridge rehabilitation.--Extensive rehabilitation of this aging concrete bridge began in 2014 and will continue for several years. In a cooperative effort between PGC, PennDOT, PPL Corporation and Michael Baker Corporation, a nest box and web camera were installed near the bridge on the PPL General Office building, where the falcons have nested previously, to provide an alternative nest site. However, the falcons did not use the nest box; instead they relocated their nest 2.7 km away to the Tighman Street Bridge, which is similar in structure to the 8th Street Bridge.

Allentown, Tilghman Street Bridge rehabilitation.--The Tilghman Street Bridge will undergo extensive rehabilitation at an undetermined time in the near future. PennDOT is coordinating with PGC about the project.

Clark's Ferry Bridge.--PGC and PennDOT have had preliminary discussions about a major bridge rehabilitation project projected to start in 2016 or 2017 and continue for 2 years.

Commodore Barry Bridge.--DRPA and PGC are in discussions regarding a 3-year repainting project planned for a start in 2014.

Dannehower Bridge.--PennDOT's plans to do its biennial inspection of the bridge structure in May were thrown into disarray when peregrine falcons were found nesting on the bridge. PennDOT inspected the portions of the bridge distant from the falcon nest according to their original schedule and delayed inspection of the remainder until August, after the nesting season. PennDOT plans to schedule future inspections outside the nesting season.

Exelon Eddystone Generating Station.--The coal-fired electric generating plant has been de-commissioned and the site is being reconfigured as an oil terminal. This involves demolition of

many structures and construction of new ones. The falcons have nested in an air vent in the wall of the “crusher house,” where they have had poor nesting success and have experienced nestling deaths. Exelon delayed demolition of the crusher house until December, well after the single fledgling had dispersed from the site, and installed a new nest box on the roof of the main building in November, a month prior to demolition of the crusher house. The nest box design and siting were recommended by PGC in an effort to provide a superior structure and location for nesting.

Manayunk, St. John the Baptist Church.--The church building is in need of masonry and other repairs. Work plans and scheduling are under discussion.

Muncy sewer line.--A new sewer line spanning the Susquehanna River was installed adjacent to the Route 405 Bridge on which peregrine falcons nest. Installation was done during the nesting season by directional drilling from 1 side of the river to the other followed by pulling pipe. Based on information supplied by the contractor, PGC determined that no impact on the falcons was anticipated. The falcons nested successfully and produced 2 fledglings.

Norman Wood Bridge.--Emergency inspections were done during mid-March to evaluate stress cracks produced by movement of heavy equipment across the bridge.

Pennsylvania-New Jersey Turnpike Delaware River Bridge.--Another work project on this bridge, the fourth in the last 5 years, was started in 2013, and yet another, a multi-year repainting project, began in 2014. The PGC consulted extensively with bridge authorities and engineers to schedule the projects and provide safeguards to minimize disturbance to the falcons. These provisions were written into the contracts. A dedicated peregrine falcon monitor will monitor the falcons and the work activity during both projects.

Reading, downtown.--In early 2014 the City of Reading assumed ownership of the building on which peregrine falcons have nested, on a ninth floor balcony, since 2008. Most of the building, including the ninth floor, has been vacant during that time. The PGC and the City of Reading are in communication as the city develops its plans for possible renovations and for obtaining tenants.

Scranton, Electric City Building.--In early March it was discovered that the Scranton pair had relocated their nest to the “Electric City” building 1 city block from their previous nest site. As a result of coordination with PGC, the building managers delayed roofing repairs until after the end of the nesting season.

Scudder Falls Bridge.--PGC and DRJTBC are in discussions about a long-term plan to double the width of the bridge by building a new span parallel to the existing bridge, which hosts nesting peregrines, and then to demolish and rebuild most of the structure of the existing bridge.

Talmage Quarry.--Peregrine falcons were found nesting successfully in Talmage Quarry in 2014. The quarry supplies limestone for road building and other applications, and has been essentially inactive for 2 years, but is projected to be re-activated in the near future. The PGC and the quarry owners are in communication about future plans.

Walt Whitman Bridge.--The bridge is scheduled for re-painting beginning in 2015 and

lasting 3 years. The PGC and DRPA are coordinating the work plan.

Outreach

Web casts.--Video coverage of nesting activities continued at RCSOB in Harrisburg and at the Gulf Tower and the University of Pittsburgh Cathedral of Learning in Pittsburgh.

RCSOB.--The peregrine falcon nest site was monitored with live video Web streaming at the RCSOB in Harrisburg (DEP 2014). The Web site, with its Web cam, supporting information, email account, falcon story submission and related links, continues to be one of the most popular wildlife watching websites in the world.

Pittsburgh Nest Sites.--Web cameras at the nest site at the University of Pittsburgh Cathedral of Learning and at the Gulf Tower were again provided by the National Aviary (National Aviary 2014). Coverage allows the public to watch live video Web streaming of nesting activity.

Banding Events.--Groups were invited to attend banding events where logistically possible, most notably at Philadelphia City Hall, the RCSOB in Harrisburg, and the Gulf Tower in Pittsburgh. These are popular events, drawing capacity crowds. Philadelphia city officials and members of the public attended the banding event at Philadelphia City Hall. The event was covered by local newspapers and featured on the TV evening news. At the RCSOB, 170 students and educators from area schools attended the banding of the nestlings. The event was also broadcast live locally on TV and world-wide by Webcast. At the Gulf Tower, the National Aviary partnered with the PGC to invite members of the public and the local media to attend the banding.

Teacher In-Service Workshop.--The Pennsylvania Department of Environmental Protection and the PGC again partnered to facilitate a spring endangered species education teacher in-service workshop at the RCSOB. On 8 April, 35 Pennsylvania teachers and environmental educators were instructed on peregrine falcon reintroduction efforts, endangered species curriculum activities, and teaching techniques to address urban habitat.

Public Presentations.--Dan Brauning and Art McMorris presented talks on peregrine falcon biology and population dynamics and the Pennsylvania Peregrine Falcon Recovery and Management program to numerous public groups during the year. Those presented by Dr. McMorris included the following:

1/14/2014	Wildwood Park Winter Lecture Series	Harrisburg, PA
2/11/2014	Sweet Arrow Lake Conservation Association	Pine Grove, PA
3/7/2014	PA Fish & Boat Commission	Pleasant Gap, PA
4/8/2014	Peregrine Falcon Educator Workshop (RCSOB)	Harrisburg, PA
6/9/2014	PGC Board of Commissioners (public meeting)	Harrisburg, PA
9/4/2014	Middle Creek Wildlife Management Area	Stevens, PA
11/5/2014	Medford Leas Bird Club	Medford, NJ
12/4/2014	Delaware Valley Ornithological Club	Philadelphia, PA
12/11/2014	Appalachian Audubon Society	Camp Hill, PA

Media Coverage.--Peregrine falcons continue to capture the public's interest and are

frequently featured in many media outlets throughout the year. The Pennsylvania Game Commission's work with peregrine falcons is publicized on the Web via live webcasts, on the websites of numerous cooperating agencies (e.g. Aark Wildlife Rehabilitation and Education Center, Delaware River Joint Toll Bridge Commission, The National Aviary, DEP, PPL Corporation, Red Creek Wildlife Center), and in blogs and online discussion groups that are too numerous to keep track of.

Peregrine falcon specific information was viewed on the PGC's website 10,770 times during 2014. The target audience is educators, school children and adults interested in wildlife and conservation.

Research Publications

A peer-reviewed article reporting an analysis of productivity, mortality, and management of urban peregrine falcons in northeastern North America, conducted in collaboration with researchers in Quebec, New Jersey and Massachusetts, was published (Gahbauer et al. 2015).

A preliminary report of the analysis of contaminants in peregrine falcon eggs, conducted in collaboration with researchers in Illinois and elsewhere, was presented at a meeting of the Society of Environmental Toxicology and Chemistry (Chen et al. 2014).

RECOMMENDATIONS

1. Nest boxes or trays should be placed on any building or bridge where peregrine falcons are nesting and the nest site is judged to be insecure for nesting birds. Nestlings in bridge girders should be transferred to a suitable nest box or tray to increase prospects of fledging. Placing of nest boxes on man-made structures where falcons are not already nesting, in an attempt to attract birds there, is not recommended; it is preferable to let the birds seek out natural sites.

2. Maintenance and construction on bridges, buildings and other manmade structures supporting nesting peregrines must be coordinated with the PGC to assure minimized disturbance of nesting birds.

3. Nestlings health evaluations should be conducted when feasible.

4. Inspections of historic cliff and potential urban nest sites should be completed at regular intervals, in accordance with Pennsylvania's peregrine management plan and federal monitoring protocol.

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Table 1. Number of young peregrine falcons produced in Pennsylvania by nest site, 2004-2014 ^a.

Locations	Number of young produced per year ^b										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Allentown				TP	4	4	3	4	3	4	3
Ben Franklin Bridge	S	?	4	1	3	3	2	4	4	2	4
Bethlehem									4	3	3
Brunner Island PPL plant							2	2	3	3	2
Clark's Ferry Bridge							3	4	AP	3	3
Columbia Bridge				AP	AP	AP	2	2	AP	2	3
Commodore Barry Bridge	?	[AP] ^c	TP	TP	2	1	3	AP	AP	3	3
Cromby power station		<i>New 2014</i>									TP
Dannehower Bridge		<i>New 2014</i>									AP
Delaware Water Gap	AP					AP	AP	AP	AP	AP	AP
Erie, Donjon Shipbuilding								TP		1	AP
Etna, 62nd St. Bridge				AP							
Exelon Eddystone power station								AP	TP	1	1
French Creek State Park								3	AP	AP	AP
Girard Point Bridge	3	1	4	3	2	4	2	AP	2	3	3
Glenfield I-79 Bridge									2	3	AP
Greentree Water Tower										TP	TP
Harrisburg, Rachel Carson State Office Bldg.	3	3	5	4	4	5	2	1	2	4	4
Hospital of U. of PA (HUP)										1	AP
Lancaster, Downtown										TP	
Luzerne County cliff				AP	2	3	2	3	3	3	TP
Manayunk, St. John Church								2	2	4	4
Martin's Creek PPL power station		2	3	3	4	3	2	4	4	4	2
McElhattan Bridge					2	4	4	4	3	4	AP
McKees Rocks Bridge					AP	3	2	AP	AP	AP	TP
Monaca Bridge				2	4	3	AP	4	4	TP	4
Montgomery Cliff	AP	1	1	AP	2	4	1	AP			TP
Montour PPL power station				1	4	3	2	1	3	1	2
Muncy Rt. 405 bridge									1	1	2
Norman Wood Bridge						TP	TP	AP	S	AP	TP
PA/NJ Turnpike Bridge	4	2	3	3	4	4	3	3	3	3	5
Philadelphia: City Hall	S					4		4	4	4	4
Wachovia Bldg.						2					
Schuylkill Exp.		3	AP	TP							
Pittsburgh, Gulf Tower	<i>Returned 2014</i>	4	3	5	4	2	2	5	5		5

Table 1. cont.

Locations	Number of young produced per year ^b										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Pittsburgh Downtown									1	4	
Pittsburgh, U. Pitt. Cathedral	4	3	3	4	3	4	5	4	3	1	AP
Pittston/Duryea: Bridge	3			4	3						
Campbell's Ledge		2	3			2	3	1	3	AP	AP
Reading, downtown				1	3	4	3	2	3	4	3
Safe Harbor							AP		S		TP
Scranton, downtown										AP	AP
<i>Relocated 2014</i>											
Scudder Falls Bridge					1	3	3	2	AP	[2] ^c	S
Shikellamy cliff				AP	1	AP					
Talmage Quarry											3
<i>New 2014</i>											
Tarentum Bridge							TP	S	2	AP	2
Temple Univ. Medical School										AP	
Three Mile Island, Middletown	2	3	3	2	2	1	2	3	3	3	2
Tilbury Knob											AP
<i>New 2014</i>											
Wade Bridge, I-81 Harrisburg							AP				
Walt Whitman Bridge	3	[4] ^c	[1] ^c	[4] ^c	4 ^d	[2] ^c	[3] ^c	3	[1] ^c	1	[TP] ^c
Westinghouse Bridge				S			3	3	AP	1	2
Wilkes-Barre	2	3	2	3	4	4	AP	AP	TP	AP	1
Williamsport, Market St. Br.										2	TP
Summaries ^e											
Hacking summary							-3				
Number of Occupied Nests ^{f,g}	11	11	13	21	23	25	30	32	32	40	43
Number of Active Pairs ^g	11	11	12	18	23	24	28	31	30	37	35
Percent of pairs active ^g	100	100	92	86	100	96	93	97	94	93	81
Number of Successful Pairs ^g	9	11	11	13	21	21	23	23	22	28	24
Percent of pairs successful ^g	82	100	85	62	91	84	79	72	69	70	56
Young produced ^b	29	26	36	35	60	68	61	68	62	73	70
Productivity: Young/Occupied Nest ^h	2.64	2.36	2.77	1.67	2.61	2.72	2.10	2.13	1.94	1.83	1.63
Young/Active Pair ^h	2.64	2.36	3.00	1.94	2.61	2.83	2.18	2.19	2.07	2.03	2.00
Nestlings known lost ¹	2	0	1	5	1	2	3	2	5	3	6
Known fledgling mortality, pre-dispersal	2	4	1	3	5	6	7	5	4	11	6
Known fledgling mortality, post-dispersal	1	0	2	3	0	3	0	0	0	2	1

^a Includes nesting pairs on Delaware River bridges that occasionally move nest site to the New Jersey side. When nesting occurs on the NJ side of the state line, data are placed in square brackets and noted with footnote "c". NJ data are not included in the

summaries at the bottom of the table.

^b “Young produced” is defined as the number of young that fledged or reached fledging age; and pairs that produced young, by this definition, are defined as Successful Pairs. Where no young were produced, AP = Active Pair (pair produced nestlings or eggs, or showed evidence of incubating); TP = Territorial Pair (pair present defending territory during nesting season, but no evidence of eggs or young). All Successful Pairs are also Active, and all Active Pairs are also Territorial. "S" represents a single adult bird observed through the nesting season, and a “?” reflects uncertainty of activity.

^c Nest was on the New Jersey side of the bridge. Results are not included in the Pennsylvania totals.

^d Three of the 4 young were transferred to West Virginia cliff hacking site by PGC.

^e Summaries exclude data from nests on the NJ side of the state line.

^f Occupied Nests are nest sites that are occupied by a Territorial, Active or Successful Pair of peregrine falcons throughout the nesting season.

^g See footnote b for definitions of Successful, Active and Territorial Pairs.

^h Productivity is defined as the mean number of young produced per Occupied Nest, as indicated. See footnotes b and f for further definitions.

ⁱ Data for nestlings known lost begin in 2007.

Table 2. Nesting results at occupied nests in Pennsylvania, 2014^a.

Nest site	Nest Type ^b	Status ^c	Unhatched Eggs ^d	Nest-lings	Banded	Fledged ^e	Rescues ^f	Known lost ^d		
								Nestlings	Fledged	Dispersed
Allentown, Tilghman St. <i>Relocation</i>	Br -	SP		3	0	3				
Ben Franklin Bridge	Br +	SP	0	4	4	4	1		1	
Bethlehem	Bl -	SP		3	0	3				
Brunner Island PPL plant	Bl -	SP	2	2	0	2				
Clark's Ferry Bridge	Br -	SP	0	3	3	3				
Columbia, Rte. 462 Bridge	Br -	SP	0	3	3	3	3		1	1
Commodore Barry Bridge	Br -	SP	0	3	3	3				
Cromby power station <i>New</i>	Bl -	TP		0	0	0				
Dannehower Bridge <i>New</i>	Br -	AP	1	0	0	0				
Delaware Water Gap	Cl -	AP	0	1	0	0				
Erie, Donjon Shipbuilding	Bl -	AP	≥1	0	0	0				
Exelon Eddystone power station	Bl -	SP		1	0	1				
French Creek State Park	Cl -	AP		2	0	0		2		
Girard Point Bridge	Br + ^g	SP	0	3	3	3				1
Glenfield, I-79 Bridge	Br -	AP	2	1	1	0		1		
Greentree Water Tower	WT -	TP		0	0	0				
Harrisburg, RCSOB	Bl +	SP	0	4	4	4	4			1
Hospital of U. of PA (HUP)	Bl -	AP	4	0	0	0				
Luzerne County cliff	Cl -	TP		0	0	0				
Manayunk, St. John Church	Bl -	SP	0	4	4	4				
Martin's Creek PPL power station	Sm +	SP	3	2	2	2				
McElhattan Bridge <i>Relocation</i>	Br -	AP	1	0	0	0				
McKees Rocks Bridge	Br -	TP		0	0	0				
Monaca Bridge <i>Relocation</i>	Br -	SP	0	4	4	4				
Montgomery Cliff	Cl -	TP		?	0	0				
Montour PPL power station	Sm +	SP		2	0	2				
Muncy Rt. 405 Bridge	Br -	SP	1	2	2	2				
Norman Wood Bridge	Br -	TP		0	0	0				
PA/NJ Turnpike Bridge	Br #	SP	0	5	5	5	1			
Philadelphia City Hall	Bl +	SP	0	4	4	4				1
Pittsburgh, Gulf Tower <i>Relocation</i>	Bl -	SP	0	5	5	5				

Table 2. cont.

	Nest Type ^b	Status ^c	Unhatched Eggs ^d	Nest- lings	Banded	Fledged ^e	Rescues ^f	Known Nestlings	lost ^d Fledged	Disperse
Pittsburgh, U. Pitt. Cathedral	Bl +	AP	1	0	0	0				
Pittston/Duryea: Campbell's Ledge	Cl -	AP	1	2	2	0		2		
Reading, downtown	Bl -	SP	0	4	3	3	1	1		
Safe Harbor	Br -	TP		0	0	0				
Scranton, downtown <i>Relocation</i>	Bl -	AP	1	0	0	0				
Talmage Quarry <i>New</i>	Q -	SP		3	0	3				
Tarentum Bridge	Br -	SP		2	2	2			1	
Three Mile Island, Middletown	Bl -	SP		2	0	2	2			
Tilbury Knob <i>New</i>	Cl -	AP	?	0	0	0				
Westinghouse Bridge	Br -	SP	1	2	2	2				
Wilkes-Barre, Market St. Bridge	Br -	SP	0	1	1	1				
WilliamSPORT, Market St. Br.	Br -	TP		0	0	0				
Totals			≥19	77	57	70	12	6	6	1
43 Occupied Nests; 35 Active; 24 Successful										

^a Occupied Nests are nests that are occupied during the nesting season by pairs that are designated as Territorial, Active or Successful. See footnote c for definitions.

^b Bl = building, Br = bridge, Cl = cliff, Q = active quarry ledge, Sm = smokestack, WT = water tower. + = nest box or tray, # = other enhancement (e.g., gravel), - = no nest site enhancement.

^c Status shown is highest breeding evidence documented. SP = Successful Pair (produced fledged young or young of fledging age); AP = Active Pair (produced nestlings or eggs, or showed evidence of incubating); TP = Territorial Pair (pair defended territory during nesting season). All Successful Pairs were also Active, and all Active Pairs were also Territorial.

^d Observed numbers of unhatched eggs or of lost young; actual numbers may be higher. Where no number is shown, eggs or young may have been lost without being detected. Young known to be lost are further categorized as Nestlings (prior to fledging), Fledged (post-fledging but prior to dispersal from nest site) or Dispersed (young of the year after dispersal from nest site).

^e Number fledged or raised to fledging age.

^f Number of fledgling rescues near nest.

^g Two nest boxes are present.

Table 3. 2014 nest occupancy, success and productivity in Pennsylvania by nest substrate.

Nest type	Number of occupied nests	Number of successful nests	Number of young fledged
Man-made structures:			
Bridge	19	12	35
Building	14	9	28
Smokestack	2	2	4
Water Tower	1	0	0
Quarry	1	1	3
(Total man-made)	37	24	70
Natural sites:			
Cliff	6	0	0
Totals	43	24	70

Table 4. Listing of peregrine falcon band numbers used in Pennsylvania, 2014: Nestlings banded at nest.

County	Location	Banding Date	Sex	USFWS Band	Color Band ^a	Wght g.	Tape ^b
Allegheny	Glenfield, I-79 Bridge	28 May	Unc ^{c,d}	1947-04796	12/BR	685	-none-
Allegheny	Gulf Tower	20 May	M	2206-79783	05/AP	720	-none-
			M	2206-79785	06/AP	720	-none-
			Unc ^e	1687-00596	19/AR	720	-none-
			Unc	1687-00597	20/AR	720	-none-
			F	1687-00598	89/Y	970	-none-
Allegheny	Tarentum Bridge	22 May	M ^f	2206-79786	08/AP	475	
			F	1947-07033	03/BR	>1000	
Allegheny	Westinghouse Bridge	1 July	F ^g	1947-07078	47/BR	730	-none-
			Unc	1947-07079	48/BR	660	black
Beaver	Monaca bridge	21 May	M	2206-79784	07/AP	620	
			F	1687-00599	00/BR	540	
			F	1687-00600	01/BR	500	
			F	1947-07032	02/BR	500	
Berks	Reading, downtown	27 May	M	1156-12534	99/AP	680	red
			F	1947-07061	30/BR	900	white
			F ^h	1947-07063	31/BR	895	yellow
Bucks	PA/NJ Turnpike Brdg.	15 May	M	1156-12527	92/AP	440	white
			M	1156-12529	94/AP	525	blue
			F ⁱ	1947-07052	76/AR	520	red
			F	1947-07053	93/AR	665	yellow
			F	1947-07056	96/AR	665	-none-
Dauphin	Clark's Ferry Bridge	5 May	M	1156-12528	93/AP	430	red
			F	1947-07054	94/AR	650	white
			F	1947-07055	95/AR	620	blue
Dauphin	Harrisburg, RCSOB	13 May	M ^{j,k}	1156-12501	53/AP	640	-none-
			M ^l	1156-12502	54/AP	585	-none-
			F ^m	1947-04794	10/BR	740	-none-
			F	1947-04795	11/BR	785	-none-
Delaware	Commodore Barry Br.	2 June	F	1947-07070	38/BR	>1000	red
			F	1947-07071	39/BR	945	white
			F	1947-07072	40/BR	940	blue
Lancaster	Columbia, Rte. 462 Br.	31 May	M ⁿ	1156-12537	02/BP	625	red
			F ^o	1947-07068	36/BR	940	white
			F ^{n,p,q}	1947-07069	37/BR	965	blue

Table 4. cont.

County	Location	Bandin g Date	Sex	USFWS Band	Color Band ^a	Wght g.	Tape ^b
Luzerne	Campbell's Ledge Cliff	28 May	M ^r	1156-12535	00/BP	550	red
			F ^r	1947-07064	32/BR	695	blue
Luzerne	Wilkes-Barre, Market St.	11 June	M	1156-12538	03/BP	675	
Lycoming	Muncy Rte. 405 bridge	18 July	M	2206-79787	70/AP	610	green
			F	1947-07034	04/BR	960	red
Northampton	Martin's Creek PPL	12 June	M	1156-12539	04/BP	650	red
			M	1156-12540	05/BP	610	yellow
Philadelphia	Ben Franklin Bridge	30 May	M	1156-12536	01/BP	620	red
			F ^s	1947-07065	33/BR	890	white
			F ^t	1947-07066	34/BR	955	blue
			F ^u	1947-07067	35/BR	960	yellow
Philadelphia	Girard Point Bridge	9 May	M ^v	1156-12525	90/AP	620	red
			M	1156-12526	91/AP	595	white
			F	1947-07051	75/AR	890	blue
Philadelphia	Manayunk, St. John Ch	27 May	M	1156-12532	97/AP	750	red
			M	1156-12533	98/AP	685	white
			F	1947-07059	99/AR	>1000	blue
			F	1947-07060	29/BR	>1000	yellow
Philadelphia	Philadelphia City Hall	20 May	M ^w	1156-12530	95/AP	685	blue
			M ^x	1156-12531	96/AP	695	yellow
			F	1947-07057	97/AR	>1000	red
			F	1947-07058	98/AR	>1000	white

^a All color bands are Black over Green (Black/Green). "--none--" indicates no tape was used.

^b Color of marker tape placed on USFWS band.

^c Unc = Sex Uncertain

^d Disappeared from nest 10 June at age 35d., prior to fledging.

^e Observed 16 October in North Ridgeville, OH, alive and free (sight record).

^f Not seen after fledging, despite much monitoring effort; presumed lost.

^g Found injured early September in Columbus, OH. In rehab.

^h Found injured on sidewalk near nest (apparent collision) 17 June, 1 day after fledging; rehabilitated, released 24 June.

ⁱ Injured by entrapment in razor wire 10 June soon after fledging; taken to rehab.; released 16 September.

^j Rescued from sidewalk soon after fledging 28 May; released.

^k Found dead near nest 7 June: collision with building.

^l Rescued from street soon after fledging 30 May; released.

^m Rescued twice soon after fledging: from sidewalk 3 June and from enclosed courtyard 4 June. Released.

ⁿ Rescued from river near nest 10 June soon after fledging; released.

^o Not seen after fledging, despite much monitoring effort; presumed lost.

^p Rescued a second time from river near nest 12 June; rehabilitated; released near nest 20 June.

- ^q Found injured 29 June in Sunbury, PA, 80 km from nest; hit by vehicle. Died in rehab.
- ^r Disappeared from nest 1 June at age 21d., prior to fledging.
- ^s Rescued from roadway near nest 17 June soon after fledging; released.
- ^t Found dead on roadway near nest, 8 July.
- ^u Observed 14 Sept. Cape May, NJ, 115 km from nest. Caught and released at hawk banding station.
- ^v Found dead at Philadelphia International Airport approx. 4 km. from nest 26 June: collision with aircraft.
- ^w Found injured on roadway 3 km from nest 16 July, apparent collision with vehicle. Euthanized.
- ^x Observed 11 August in Lyndhurst, NJ, 130 km from nest. Alive, free (sight record).

Table 5. Identities of nesting peregrine falcons at occupied nests, 2014.

Nest Site	Parent	USFWS Band ^a	Aux. Band ^{a,b}		Banding (hatch) date ^c	Age at Banding	Banding Site
			Number	Color			
Allentown, Tilghman St. Bridge	M	none	none		≤ 2005		
	F	present	?	Bl/Gr	≤ 2010		
Ben Franklin Bridge	M ^d	none	none		≤ 2004		
	F ^d	1807-62116	25/E	Bl/Gr	6/26/2003 ^e	Nestling	LTV Steel Bldg, Cleveland, OH
Bethlehem	M ^{d,f}	none	none		≤ 2012		
	F ^d	1687-10883	51/AE	Bl/Gr	5/27/2009	Nestling	RCSOB, Harrisburg, PA
Brunner Island PPL Plant	M	present	present	Bl/Gr	≤ 2009		
	F	1687-00509	84/Y	Bl/Gr	5/28/2008	Nestling	US11 Bridge, Pittston, PA
Clark's Ferry Bridge	M	present	present	Bl/Gr	≤ 2008		
	F ^d	1687-10854	A/50	Bl/Gr	5/21/2008	Nestling	PA-NJ Turnpike Bridge, Bristol, PA
Columbia, Rte. 462 Bridge	M ^d	816-69321	*1/*3	Bl/Gr	5/27/2004	Nestling	Southmarsh I. WMA, MD; hacked at Harper's Ferry, MD
	F ^d	1807-65014	09/AD	Bl/Gr	5/14/2010	Nestling	James River Bridge, VA; hacked at Shenandoah National Park, VA
Commodore Barry Bridge	M	?	?				
	F ^{d,f}	1687-02845	08/AE	Bl/Gr	May 2010	Nestling	Walt Whitman Br, Gloucester City, NJ
Cromby power station	M ^f	?	?		≤ 2012		
	F ^f	?	?		2013		
Dannehower Bridge	M ^{d,f}	none	none		≤ 2012		
	F ^{d,f}	present	present	Bl/Gr	≤ 2012		NJ?
Delaware Water Gap	M	?	?				
	F	?	?				
Erie, Donjon Shipbuilding	M	1126-06438	B/79	Bl/Gr	5/28/2008	Nestling	I-90 Br., Cuyahoga R., Cleveland OH
	F	1687-01203	72/U	Bl/Gr	5/29/2007	Nestling	Statler Towers Bldg., Buffalo NY
Exelon Eddystone Power Sta.	M ^d	none	none		≤ 2012		
	F ^d	present	present	Bl/Gr	≤ 2012		
French Creek State Park	M ^d	present	present	Bl/Gr	≤ 2009		
	F	none	none		≤ 2009		

Table 5. cont.

Nest Site	Parent	USFWS Band ^a	Aux. Band ^{a,b}		Banding (hatch) date ^c	Age at Banding	Banding Site
			Number	Color			
Girard Point Bridge	M ^d	present	none		2004		Philadelphia or Bristol PA? ^g
	F ^d	1807-37492	*K/*V	Bl/Rd	5/22/2003	Nestling	Ocean Gate, NJ
Glenfield, I-79 Bridge	M ^d	none	none		≤ 2010		
	F ^d	1687-30441	62/H	Bl/Rd	5/20/2010	Nestling	Bank One, Canton, OH
Greentree Water Tower	M ^{d,f}	present	present		≤ 2012		
	F ^{d,f}	none	none		≤ 2012		
Harrisburg, RCSOB	M ^d	2206-24690	*W/V	Bl/Rd	5/19/2003	Nestling	Walt Whitman Bridge, Phila., PA
	F ^d	1687-10880	48/AE	Bl/Gr	5/21/2009	Nestling	PA-NJ Turnpike Bridge, Bristol, PA
Hospital of U. of PA (HUP)	M	present	present	Bl/Gr	≤ 2011		
	F	none	none		≤ 2011		
Luzerne County cliff	M ^h	2206-80632	3/Z	Bl/Gr	6/15/2006	Nestling	Martin's Creek PPL plant, PA
	F ^h	present	A/7x ⁱ	Bl/Gr	2007-2011 ⁱ	Nestling	PA ⁱ
	F ^{d,f}	?	?				
Manayunk, St. John Church	M ^d	2206-80670	45/AC	Bl/Gr	5/14/2009	Nestling	Girard Point Bridge, Philadelphia, PA
	F ^d	1687-02809	Y/44	Bl/Gr	5/30/2008	Nestling	Union Co. Courthouse, Elizabeth, NJ
Martin's Creek PPL plant	M	none	none		≤ 2003		
	F ^d	1807-76470	23/Z	Bl/Gr	5/27/2009	Nestling	DuBois Lib., U. Mass., Amherst, MA
McElhattan Bridge	M	?	?		≤ 2006		
	F ^d	0987-51296	8/W	Bl/Gr	5/19/2005	Nestling	BB&T Building, Richmond, VA; hacked 6/3 at Hawksbill Mt., Shenandoah NP, VA
McKees Rocks Bridge	M ^d	2206-35777	V/H	Bl/Gr	6/28/1999	Nestling	Terminal Tower, Cleveland, OH
	F	none	none		≤ 2006		
Monaca RR Bridge	M	none	none		≤ 2005		
	F ^d	1687-10824	75/Y	Bl/Gr	5/24/2006	Nestling	RCSOB, Harrisburg, PA
Montgomery Cliff	M	?	?				
	F	?	?				
Montour PPL plant	M	2206-80627	64/X	Bl/Gr	5/25/2006	Nestling	Campbell's Ledge, PA
	F	none	none		≤ 2005		

Table 5. cont.

Nest Site	Parent	USFWS Band ^a	Aux. Band ^{a,b}		Banding (hatch) date ^c	Age at Banding	Banding Site
			Number	Color			
Muncy Rt. 405 Bridge	M	none	none		≤ 2011		
	F	none	none		≤ 2011		
Norman Wood Bridge	M	present	present	Bl/Gr	≤ 2011		
	F	present	present	Bl/Gr	≤ 2011		
PA/NJ Turnpike Bridge	M ^d	2206-24692	*4/*R	Bl/Gr	5/19/2003	Nestling	Girard Point bridge, Philadelphia, PA
	F ^d	1807-63442	*S/2	Bl/Rd	5/30/2002	Nestling	Castleton-on-Hudson, NY
Philadelphia, City Hall	M ^d	2206-80665	40/AC	Bl/Gr	4/17/2009	Adult	Comcast Center, Philadelphia, PA
	F ^d	987-95673	60/Y	Bl/Gr	6/13/2006	Nestling	Tuckahoe River tower, NJ
Pittsburgh, Gulf Tower	M ^d	2206-24689	*4/*E	Bl/Gr	6/11/2002	Nestling	Pitt. Cathedral, Pittsburgh, PA
	F ^d	1687-01853	M/93	Bl/Gr	5/24/07	Nestling	Landmark Building, Akron, OH
Pittsburgh, U. Pbg. Cathedral	M ^d	2206-80608	*5/*4	Bl/Gr	5/17/2005	Nestling	Gulf Tower, Pittsburgh, PA
	F ^d	1807-77607	5/*A	Bl/Gr	6/15/1999 ^e	Nestling	Firstar Bldg., Milwaukee, WI
Pittston: Campbell's Ledge	M ^d	2206-24673	*X/L	Bl/Rd	6/02/2000	Nestling	Wilkes-Barre, PA
	F ^{d,f}	none	none		≤ 2012		
Reading, downtown	M ^d	2206-80617	3/T	Bl/Gr	5/26/2005	Nestling	RCSOB, Harrisburg, PA
	F ^{d,f}	1687-00575	54/AR	Bl/Gr	7/14/2011	Nestling	Rte. 462 Bridge, Columbia, PA
Safe Harbor	M ^{d,f}	none	none		2013		
	F ^{d,f}	1807-65083	45/AV	Bl/Gr	5/16/2013	Nestling	Miles Goodwin Bridge, Suffolk, VA
Scranton, downtown	M ^d	2206-79715	77/X	Bl/Gr	5/28/2008	Nestling	Pittston Bridge, Pittston, PA
	F ^d	none	none		≤ 2011		
Talmage Quarry	M ^{d,f}	?	?		≤ 2012		
	F ^{d,f}	none	none		≤ 2012		
Tarentum Bridge	M	?	?		≤ 2010		
	F ^d	1807-02774	69/Z	Bl/Gr	5/22/08	Nestling	Benjamin Harrison Bridge, Hopewell, VA; hacked in Shenandoah NP, VA
Three Mile Island, Middletown	M	?	?				
	F	?	?				

Nest Site	Parent	USFWS Band ^a	Aux. Band ^{a,b}		Banding (hatch) date ^c	Age at Banding	Banding Site
			Number	Color			
Tilbury Knob	M ^f	?	?				
	F ^f	?	?				
Westinghouse Bridge	M ^d	present	present	Bl/Gr	≤ 2010		
	F ^d	1687-30246	68/H	Bl/Rd	5/22/2009	Nestling	Ironton-Russel Bridge, Ironton, OH
Wilkes-Barre, Market St. Br.	M ^d	none	none		2008		
	F ^d	none	none		≤ 2011		
Williamsport, Market St. Br.	M ^d	2206-79763	37/S	Bl/Gr	5/10/2010	Nestling	Montour PPL Plant, Montour Co., PA
	F ^{d,f}	none	none		2013		

^a Present = band present but band number unknown; none = no band present; ? = not known whether a band is present.

^b Characters marked with an “*” are in a horizontal position, top to left.

^c Full date indicates banding date. When only the year is shown and no band numbers are known, it is the hatch year, based on plumage when first observed. ≤ : on or before the year indicated.

^d Band information reconfirmed 2014.

^e Fledge date.

^f New nesting adult 2014.

^g Possibly from Walt Whitman bridge (Philadelphia, PA), Girard Point bridge (Philadelphia, PA) or PA/NJ Turnpike connector bridge (Bristol, PA). Birds banded at those nests in 2004 (this bird’s hatch year) received USFWS band but no auxiliary band.

^h Band readings obtained from camera on nest ledge December 2013.

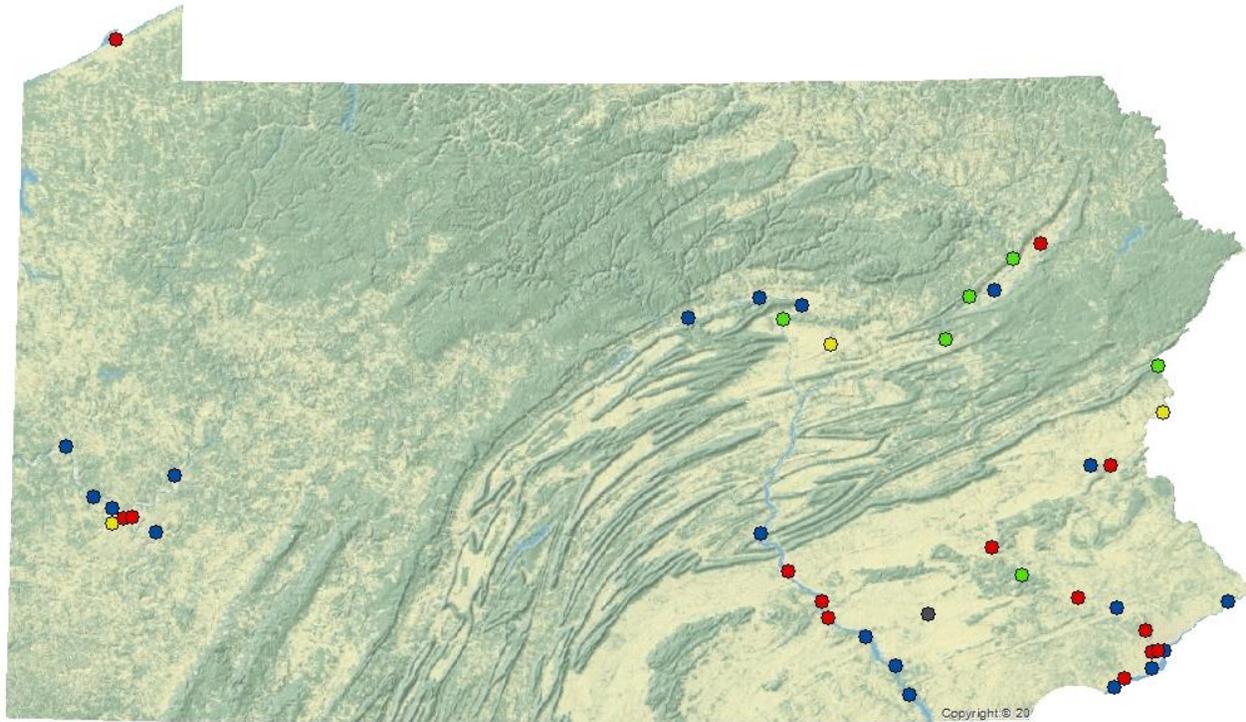
ⁱ A/7x is a partial band reading; the character designated by “x” is unknown. Bands in the A/7x series were used in PA in 2007, 2008, 2010 & 2011.

Table 6. Peregrine falcon band encounters, 2014 (including delayed reports).

Banding Site	Banding Date	USFWS Band	Aux. Band		Sex	Encounter		Status
			Number ^a	Color		Date	Encounter Site	
Pittsburgh, Gulf Tower, PA	5/22/2006	2206-80613	3/N	B/G	M	1/14/2008	New Kensington, PA	Dead
Brandywine Building, Wilmington, DE	5/14/2013	1126-15180	38/AH	B/G	M	9/4/2013	Lehigh Valley Int'l. Airport, Allentown, PA	Dead, struck by airplane
Three Mile Island, PA	6/4/2007	2206-70224	*4/*Y	B/G	F ^b	2/18/2014	Weirton, WV	Injured, in captivity
McElhattan Bridge, PA	5/25/2010	2206-79766	39/S	B/G	M	2/19/2014	Stratton, OH	Found dead
PA/NJ Turnpike Bridge, PA	5/14/2013	2206-80643	31/X	B/G	M	3/23/2014	Whippany, NJ	Alive, free (sight record)
Columbia Rte. 462 Bridge, PA	7/14/2011	1687-00575	54/AR	B/G	F	5/9/2014	Reading, downtown, PA	Nesting successfully
Luzerne County Cliff, PA	5/20/2013	1947-04791	67/AR	B/G	F	5/11/2014	Rte. 104 Genesee R. Bridge, Rochester, NY	Nesting
Columbia Rte. 462 Bridge, PA	5/31/2014	1947-07069	37/BR	B/G	F	6/29/2014	Sunbury, PA	Injured, died in rehab.
Philadelphia City Hall, PA	5/20/2014	1156-12531	96/AP	B/G	M	8/11/2014	"The Meadowlands," Lyndhurst, NJ	Alive, free (sight record)
Westinghouse Bridge, PA	7/1/2014	1947-07078	47/BR	B/G	F	9/2014	Columbus, OH	Injured, in rehab.
Ben Franklin Bridge, PA	5/30/2014	1947-07067	35/BR	B/G	F	9/14/2014	Cape May, NJ	Caught & released at hawk banding station
Pittsburgh, Gulf Tower, PA	5/20/2014	1687-00596	19/AR	B/G	F	10/16/14	North Ridgeville, OH	Alive, free (sight record)
Buffalo, NY	6/1/2014	1687-01264	85/AX	B/G	F	11/21/14	Philadelphia Int'l Airport, Phila, PA	Dead, struck by airplane

^a Asterisk indicates character is sideways (horizontal), top to left.

^b Size 6 bands were enlarged to size 7A to fit properly on female.



Nest Substrate ● Bridge ● Building ● Cliff ● Tower ● Quarry

Figure 1. Locations of peregrine falcon nests in Pennsylvania, 2014

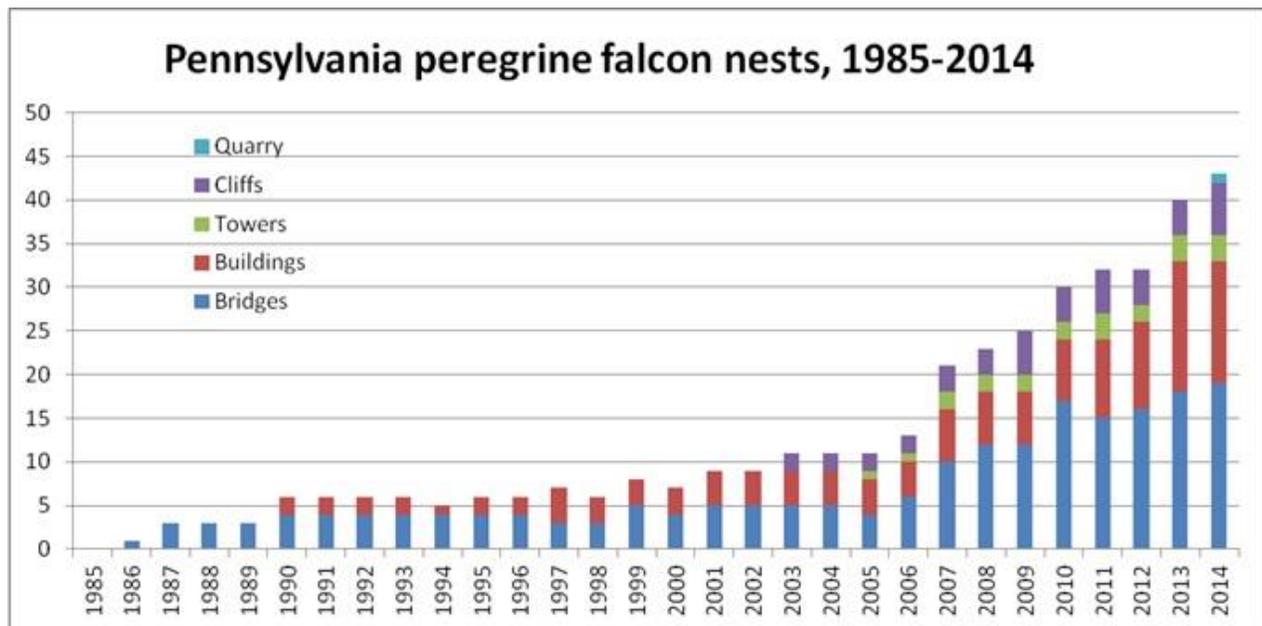


Figure 2. Number of occupied peregrine falcon nests in Pennsylvania, 1985-2014.