HERMAN OTTÓ INSTITUTE
NONPROFIT LTD.

4th INTERNATIONAL PEREGRINE CONFERENCE

Abstract book

27 September – 1 October 2017
Herman Ottó Conference Centre, Budapest

Published by Herman Ottó Institute Nonprofit Ltd.
Publisher: Rita Bárányné Erdei CEO
Contact: 1223 Budapest, Park utca 2.
www.hermanottointezet.hu
Press: ADU-PRESS NYOMDA Kft.
1139 Budapest, Fáy u. 5. Hungary

The 4th International Peregrine Conference was organised by

PROGRAMME

(25 minutes for each presentation including questions and answers)

27 September *(Wednesday)*

10:00 – 10:40 – Arrival, registration
10:40 – 11:00 – Welcome and opening speeches
11:00 – 12:40 – Presentations

- *Prommer, M., Bagyura, J., Molnár, I. L.: State and Dynamics of the Peregrine Population in Hungary after Twenty Years of the Comeback – New Challenges*
- *Beran, V., Vrána, J.: Population Trends and Diversification of Breeding Habitats of Peregrine Falcon (Falco peregrinus) in the Czech Republic since 1990*
- *Sielicki, J., Sielicki, S.: Falconry and Restoration of Peregrine Falcon Population in Poland 1990 – 2017*
- *Sorokin, A. G., Galushin, V. M.: Strategy for the Peregrine Conservation in Russia*

12:40 – 14:00 – Buffet lunch
14:00 – 15:40 – Presentations

- *Khlopotova, A., Shershnev, M.: Peregrine Falcon in the Middle Ural, Russia*
- *Pazhenkov, A., Karyakin, I., Afanasyev, D., Krivopalova, A., Pazhenkova, E.: To Restoration of the Tree-Nesting Peregrine Falcon (Falco peregrinus) Population in the Volga-Ural Region*
- *Karyakin, I., Nikolenko, E., Bekmansurov, R., Pazhenkov, A., Zinevich, L.: The Peregrine Falcon in the Volga-Ural and Altai-Sayan Regions of Russia*
- *Isaev, A. P., Solomonov, N. G., Gabyshev, V. Y., Sleptsov, S.M.: The Current State of Peregrine Falcon in Yakutia*

15:40 – 16:00 – Closing remarks

Side event I. (from about 18:00)
Reception and buffet dinner on Columbus Boat (city centre)

***

28 September *(Thursday)*

09:00 – 09:45 – Workshop I.
Arctic Falcons Specialist Group *(Chairman: Knud Falk)*
(See description of workshops below)
09:45 – 11:00 – Presentations

- *Hodson, K.: Half a Century of Monitoring of Peregrines along the Mackenzie River in Northern Canada*
- *Sielicki, J.: Peregrine – Population Modelling*

- *Kéry, M., Banderet, G., Monneret, R.-J., Schaub, M.: Integrated Modelling of the Dynamics of a Western European Peregrine Population Over Half a Century*

11:00 – 11:20 – Coffee break
11:20 – 12:35 – Presentations

- *Abuladze, A.: Present Status of Peregrine Falcon in Georgia*
- *Rau, F., Becht, J., Lühl, R.: Long-term Monitoring of a Peregrine Falcon (Falco peregrinus) Population in Southwest Germany: Population Trends and Current Changes of Breeding Habitats*
- *Vangeluwe, D.: The Peregrine in Belgium – From Extinction to World Star*

12:35 – 14:00 – Buffet lunch
14:00 – 15:50 – Poster session
15:50 – 16:00 – Closing remarks

Guided city walk (free) from about 18:00 (city centre) – only on demand

***

29 September *(Friday)*

09:00 – 11:00 – Workshop II.
Workshop on Biology and Conservation of Hierofalcons *(Chairmen: Maurizio Sarà, Giovanni Leonardi)*
11:00 – 11:20 – Coffee break
11:20 – 12:35 – Presentations

- *Zuberogoitia, I., Astorkia, L., Castillo, I., Burgos, G., Larrea, M., Azkona, A., Zuberogoitia, J., Zabala, J.: Trends of Peregrine Falcon in Northern Spain – Results of a Long-term Monitoring Project*
- *Nygård, T., Reinsborg, T.: Increasing Peregrine Population in Central Norway Shifting from the Coast to the Inland – A 40-year Study*
- *McGrady, M. J., Hines, J. E., Rollie, C., Smith, G. D., Morton, E. R., Moore, J. F., Mearns, R. M., Newton, I., Murillo-García, O. E., Oli, M. K.: Territory Occupancy and Breeding Success of Peregrines at Various Stages of Population Recovery*

12:35 – 14:00 – Buffet lunch
14:00 – 15:15 – Presentations

- *Kleinstäuber, G., Kirmse, W., Langgemach, T.: Nesting Habitat Selection of Peregrine Falcons in Eastern Germany – The State of Knowledge*
- *Lindner, M., Bäumer, B.: Influence of the Eagle Owl on the Peregrine Falcon Population in North-Rhine – Westphalia*
- *Dixon, N., Gibbs, A.: Extreme Territorial Aggression by Urban Peregrine Falcons Towards Common Buzzards in South-West England*

15:15 – 16:00 – Closing remarks

Free programme

30 September *(Saturday)*

09:00 – 11:00 – Workshop III. & IV.
Urban Peregrines: an update and perspectives *(Chairman: Giacomo Dell'Omo)*
Reconstructing the process of Peregrine's return to Europe *(Chairman: Mátyás Prommer)*
11:00 – 11:20 – Coffee break
11:20 – 12:35 – Presentations

- *Bondi, S., Vitale, E., Antioco, N., Guzzo, E., Schifani, E., Mascara, R., Sarà, M.: Comparative Analysis of Lanner and Peregrine Trophic Niche in the Mediterranean*
- *Bondi, S., Guzzo, E., Mascara, R., Zanca, L., Sarà, M.: Natal Dispersal of First-Winter Peregrine Falcons*
- *Dell'Omo, G.: Transition to Independence and Onset of Dispersal of Urban Peregrines*

12:35 – 14:00 – Buffet lunch
14:00 – 15:40 – Presentations

- *Nowak, Z., Sielicki, S.: Genetic Variability of the Peregrine Falcon (Falco peregrinus peregrinus) Intended for Reintroduction in Poland*
- *Inderwildi, E., Müller, W., Ayé, R.: Intentional Poisoning of Peregrine Falcons in Switzerland – An Important Threat Factor?*
- *Williams, N.: The Memorandum of Understanding on the Conservation of Migratory Birds of Prey in Africa and Eurasia (Raptors MoU) – An introduction*
- *Prommer, M., Bagyura, J.: Peregrine Falcon (Falco peregrinus) vs Saker Falcon (Falco cherrug) in Hungary – Competitors or Not?*

15:40 – 16:00 – Closing the conference

Side event II. (from about 18:00)
Closing dinner (seated) in Mátyás Pince (city centre)

***

1 October *(Sunday)*

Excursion to Vértes Hills area by bus. Maximum 45 persons.

Departure from Budapest: 09:00
Arrival to Budapest: 17:00

DESCRIPTION OF WORKSHOPS

Arctic Falcons Specialist Group *(Chairman: Knud Falk)*

Working meeting: collaboration on joint circumpolar publication, harmonisation and sharing basic monitoring parameters, and contributing to Arctic Councils' upcoming State of the Arctic Terrestrial Biodiversity Report (START). Meeting is mainly for AFSG members, but open to visitors.

Workshop on Biology and Conservation of Hierofalcons *(Chairmen: Maurizio Sarà, Giovanni Leonardi)*

The Hierofalco group include Gyr (Falco rusticolus), Saker (Falco cherrug), Lanner (Falco biarmicus) and Laggar Falcons (Falco jugger) – closely related species that inhabit open habitats from deserts across temperate steppes to arctic tundra. Due to various reasons the level of knowledge on their biology, precise distribution and ecology is not equal for all species and regions. The workshop aims to have an overview on the state of the species' conservation status, threats, ongoing conservation actions highlight shortages and needs for research and conservation measures. It also provides good opportunity to share best conservation/research practices that can be used in case of other Hierofalco species. As an outcome, we expect to form a network of Hierofalco specialists and address common research topics on comparative ecology of species with strong conservation implications. The conference is a unique occasion for assembling Hierofalco specialists in a single workshop to share their experience. Contributions on the Laggar falcon are very welcomed due the very poor knowledge on this species.

Urban Peregrines: an update and perspectives *(Chairman: Giacomo Dell'Omo)*

In the last 15 years Peregrines have progressively colonized our cities and nowadays breed in a variety of structures in many countries. As an example, the first Peregrines breeding in Rome were recorded in 2005 and there are now (2017) not less than 14 breeding pairs. In many other Italian and European cities peregrines have also increased their presence both as wintering and breeding birds. The workshop will be an opportunity to discuss among many of us the urbanisation of the peregrines in our countries and update on the current situation in various European cities. Urban peregrines represent a unique opportunity in that they are easier to observe and to access than those living on cliffs and therefore can be studied across cities using the same protocol. They are suitable for behavioural, genetic and ecotoxicology studies and for studying the population dynamics and regulation. They also can represent a bio-indicator that can allow comparisons across cities. Many of the nest sites are under camera surveillance and the behaviour of the birds can be observed in detail by thousands of people on the web. The workshop will also represent an opportunity to set up a network of those interested in sharing their data and participate to a common protocol of data collection for the coming years. This could help to harmonise the efforts and target with a coordinated approach specific issues across countries. The peregrines is already an important flag species, birds living in cities can even better fulfill this role as they live closer to us.

Reconstructing the process of Peregrine's return to Europe *(Chairman: Mátyás Prommer)*

Peregrines have been successfully re-populating Europe after the population collapse in the DDT era. The process has been closely followed in many European countries, yet no comprehensive analysis has been made on European-level including data from the various countries. The workshop aims to examine the potential for a common European project to map the return of the species, unveil hidden connections and understand the recolonization process as much as possible.

ORAL PRESENTATIONS

PEREGRINE FALCON IN THE MIDDLE URAL, RUSSIA

Aleksandra Khlopotova* – Michael Shershnev

Natural park 'Chusovaya river'
*e-mail: al-heyen@mail.ru

The Natural park '*Chusovaya river*' (860 km^2) is located at the Western slope of the Ural Mountains. Today it is the place, where one of the most numerous populations of nominate subspecies of the peregrine falcon (*Falco peregrinus peregrinus*) in Russian Federation is being studied. The valley of the Chusovaya River is abounding rocky cliffs, which are considered to serve as optimal habitat of aforementioned subspecies of the peregrines. Our investigation of those birds' population began in 2009.

We have been monitoring 21 nesting sites that peregrines occasionally occupy. Taking into account the early studies conducted in the area (Karyakin 1998), we can claim that those locations have already been chosen by peregrines for nesting during the last 20 years. Recent results of individual marking implemented in cooperation with the Ringing Centre of the RRRCN (URL: http://rrrcn.ru/ru/ringing) also reveals the tendency of the peregrine falcon to stick to its habitat. For instance, two males of the peregrine falcon (D24 and D26) ringed by us in 2014 came back to the Chusovaya river in 2016 and brought up offspring in pairs with non-ringed females.

The average clutch size was 3.1 eggs (n=52) and the average number of fledglings per nest for 2014-2016 amounted to 1.85 fledglings (n=52). Out of 71 breeding attempts we observed during eight years (2009-2016) 37 were successful. In total, 17% out of 48% of failure cases was due to anthropogenic factor. The negative impact on the success of peregrines' breeding resulted mostly from illegally organized rock climbing, as nest sites in the breeding period cannot always be controlled by the Department of protection of Natural Park. The similar situation is found in Italy and the USA (Brambilla et al. 2004; Craig & Enderson 2004).

References

Brambilla M., Rubolini D., Guidali F. 2004. Rock climbing and raven Corvus corax occurrence depress breeding success of cliff-nesting peregrines Falco peregrines. Ardeola 51(2): 425-430.

Craig, G.R., Enderson, J.H. 2004. Peregrine Falcon Biology and Management in Colorado 1973-2001.

Karyakin I.V. 1998. Sapsan in *Pernatyehishhniki Ural'skogoregiona: Sokoloobraznye (Falconiformes), Sovoobraznye (Strigiformes)* [Raptors of the Ural region: birds of prey (Falconiformes), Owls (Strigiformes)]: 180-209.

Ringing Center of the Russian Raptor Research and Conservation Network(2017). Available at: http://rrrcn.ru/ru/ringing (accessed 28 June 2017).

PRESENT STATUS OF PEREGRINE FALCON IN GEORGIA

Alexander Abuladze*

Institute of Zoology of Georgia, Tbilisi, Georgia
*e-mail: aleksandre.abuladze@iliauni.edu.ge

Peregrine falcon (*Falco peregrinus*) in Georgia is represented by two sub-species: *F.p.brookei* is year-round resident with local seasonal movements; *F.p.peregrinus* is a passage and winter visitor. The past and present status of peregrine is described below. Before the middle of 20th century, peregrine falcon was reported as a widespread but not numerous species, inhabiting suitable habitats throughout the whole country. A sharp drop in numbers was registered in 1950-60's due to shooting, disturbance and pesticides. The species was practically extirpated as a regular breeder in some areas in 1960's. During 1970-1985 it was recorded as sporadic breeder and regular but rare passage and winter visitor in small numbers. After the mid-1980's, peregrine started to regularly nest in Georgia again.

Pairs inhabit areas little-visited by people and nests are located on inaccessible cliffs. The upper limit of breeding distribution is 2000m, but most nests can be found usually up to 1500m. Pairs use nesting territories for several years. The present size of the Georgian breeding population is about 60-80 pairs. The status of the breeding population can be considered stable with slight hints of increase. During the last decade the number of migrating and wintering birds has also increased. So, if in the 1980's up to 100 individuals were considered to migrate per autumn season across Georgia and up to 200 in 1996-2006, in recent years the number of migrating birds is around 300 - 500. The latest wintering population is estimated at 50-70 individuals, in some winters more. At present the major threats to the species are occasional shooting, illegal trapping for falconry, habitat destruction and disturbance in some breeding territories. Primary threats are illegal shooting (10-20 cases are reported annually), catching of adults during passages (at least 10 individuals annually) and taking of nestlings (at least 5 cases annually). In addition, other limiting factors such as nesting habitat destruction and human disturbance also have a negative impact on breeding success. In the presentation, general information on the species in Georgia, recommendations for an effective conservation plan are considered. Bibliography on PF in Caucasus is given.

STRATEGY FOR THE PEREGRINE CONSERVATION IN RUSSIA

Alexander G. Sorokin[1]* – Vladimir M. Galushin[2]

[1] All-Russian Research Institute for Environmental Protection, Znamenskoe-Sadki, Moscow, Russia
[2] Zoology and Ecology Department, Moscow Pedagogical State University, Moscow, Russia
*e-mail: agsorokin@mail.ru

In accordance with directions by the Russian Ministry of Natural Resources and Ecology a draft Strategy for the peregrine (*Falco peregrinus*) conservation in the Russian Federation was developed by the All-Russian Research Institute for Environmental Protection. The Strategy has to ensure restoration and long-term stable existence of the species through the Russian Federation, moderate increasing of populations within its European part and recovering of the Peregrine tree-nesting ecotype.

Six subspecies occur in Russia: *F. p . peregrinus, F. p. calidus, F. p. harterti, F. p. japonensis, F. p. pealei and F. p. brookei*. The number of peregrines is estimated to 10,000 – 20,000 pairs. Out of them 1,500-2,000 pairs inhabit European Russia including the Urals: ~80 pairs - the Kola Peninsula and Karelia, 250-300 pairs – north-eastern European tundras, over 1,300 pairs – the Volga-Ural region, the Northern Caucasus – 400-500 pairs. In the north of Asiatic Russia the Yamal and Taimyr peninsulas host 400 pairs each, while in the south the Altay-Sayan mountain region hosts over 800 pairs. Studies confirm that peregrine populations are increasing almost everywhere.

Some shootings and poisonings of falcons by pigeon fanciers as well as illegal taxidermy and egg collection still exist. The peregrine is much less of interest for falconry than the saker (*Falco cherrug*) and gyr falcon (*Falco rusticolus*). The most commonly used is the largest and numerous northern subspecies *F. p. calidus* living in remote tundras. The nominal race, *F.p.peregrinus* is missing from some regions due to development or to disturbance by people.

The peregrine is included both in the first (2001) and second edition of the Red Data Book (the latter is to be published in 2017 or 2018); a fine for its illegal taking and trade is 600,000 Rubles (~ US$ 10,000 in 2017) and 3,000,000 Rubles (~ US$ 50,000) for a taken or destroyed clutch.

Regulations have to be developed to enable the release of captive bred falcons, as well as birds confiscated from poachers and for marking raptors with telemetry devices. Illegal trade of falcons and their derivates through internet has to be stopped.

The first reintroduction attempts were launched in Moscow by the Russian Falcon center. At present at least four peregrine pairs nest on the highest skyscrapers in the city.

The Strategy is accompanied with an Action Plan until 2025 that is a basis for regional programs for peregrine studies, conservation, use for falconry and as a biological protection. It is planned to be approved at the end of 2017. We hope that its final version takes into account also basic findings and proposals by the 4th International Peregrine conference in Budapest.

TO RESTORATION OF THE TREE-NESTING PEREGRINE FALCON (FALCO PEREGRINUS) POPULATION IN THE VOLGA-URAL REGION

Alexey Pazhenkov[1]* – Igor Karyakin[2] – Denis Afanasyev[1] – Alexandra Krivopalova[3] – Elena Pazhenkova[4]

[1] Laboratory of conservation biology "Ecoton"
[2] Sibecocenter LLC., / RRRCN
[3]Samara State University
[4] St. Petersburg State University
*e-mail: f_lynx@mail.ru

Since the end of the 20th century, the number of peregrine falcons in the mountains of the Southern Ural has been increasing. Several dozen breeding pairs live in the piedmont of the Ural Mountains. Peregrines' attraction to cliffs however, prevents the species spreading to the plains.

The positive result of imprinting chicks on tree-nest to increase their potential distribution range was already shown through the re-establishment of the historic tree-nesting populations in Europe. However, a serious problem with artificial fostering of tree nesting peregrines is the lack of parents, who teach young peregrines to hunting and acquiring social skills.

We have applied the method attempting to form tree-nesting behavior pattern in the chicks of the cliff-nesting peregrine falcon.

In June 2016 and 2017, in the Southern Ural Mountains and Bugulma-Belebey Upland we discovered four nests of peregrine falcons, which were threatened by destruction due to various anthropogenic and biological factors. In order to save the broods, chicks were translocated from nest sites on cliffs to nesting platforms in trees.

Nesting platforms were constructed in trees (*Tilia cordata, Ulmus glabra, Quercus robur* and *Betula pendula*), at a height of 4, 5 and 12 m from the ground, in the upper third of the crowns. Nesting platforms simulated nests of large birds of prey. Nesting trees were at a distance of 15 to 100 m from the original nest sites.

At the time of replacement, chicks were 28 - 35 days old. On nesting platforms they spent from 3 to 12 days where they were fed by adults regularly. In total there were more than 50 feedings noted.

All four broods (nine young) fledged successfully and demonstrated typical behavior for the peregrines of their age. After fledging, juveniles visited nesting platforms for feeding for at least 8 days. Adults fed fledglings and taught them to hunt.

Thus, we consider that installation of the nesting platforms on trees near inhabited cliff nests and replacing 26–30 days old chicks on them can become appropriate method for reintroduction of the tree-nesting peregrine populations. Procedures aimed to preserve chicks, minimize adult disturbance and attract adult peregrines to nesting platform have to be implemented. Moreover, the consequent interaction between cliff and tree-nesting peregrines faces with a serious problem in forming of the tree nesting populations in the future.

The proposed method is rather time-consuming and complicated; therefore it requires more detailed discussion.

Key words: peregrine re-colonization, Volga-Ural region, nesting types, imprinting on tree-nesting

INTENTIONAL POISONING OF PEREGRINE FALCONS IN SWITZERLAND – AN IMPORTANT THREAT FACTOR?

Eva Inderwildi* – Werner Müller – Raffael Ayé

SVS/BirdLife Switzerland
*e-mail: eva.inderwildi@birdlife.ch

In May 2011, a webcam in Zurich, Switzerland, registered the sudden death of a peregrine falcon *Falco peregrinus*. The bird died while plucking a pigeon. Analyses revealed that a poison had been applied to the nape feathers of the pigeon. This was the first of several known cases of peregrine poisoning by pigeon keepers in Switzerland.

BirdLife Switzerland, with the help of numerous partners, started researches on the subject that showed that pigeon keepers native from South-eastern Europe started a "war" against peregrines and other birds of prey. These birds capture their valuable pigeons used in races with high stakes. They posted detailed instructions on the web how to poison peregrines or other raptors. Between 2006 and 2017, BirdLife Switzerland listed 4 cases of sure intentional poisonings birds of prey (3 peregrine falcons, 1 northern goshawk) were analyses confirmed the use of poison and 15 suspected cases with the presence of dead pigeons and birds of prey simultaneously or other suspicious deaths (10 peregrine falcons, 2 Eurasian sparrowhawks, 2 common buzzards, 1 unknown) in Switzerland. Two decoy pigeons with poison on the neck could be secured by the police before they were captured by the target species. Additionally, a strong regional decrease of peregrine breeding pairs was observed in the canton of Zurich and around the city of Basel. Overall, the Swiss breeding population of peregrines has decreased slightly from 2012 to 2016.

Police are actively involved in collecting evidence and in persecuting subjects that poison raptors or try to do so. A pigeon keeper who successfully killed a northern goshawk with this method was convicted in 2016 to a fine of 4000 CHF and a conditional prison sentence of 11 months. A second pigeon keeper whose decoy pigeon was captured by the police before it could harm a falcon was condemned in March 2017, but the judgement is not yet final.

While the numbers of proven and suspected cases are still low, we suspect that the phenomenon may be much more widespread. The detection probability of the poisoned peregrine falcons is probably very low. We think that the poisoning may have a negative effect on the population of the peregrine in Switzerland. BirdLife Switzerland is lobbying with authorities for stricter control of currently almost unregulated pigeon breeding. Furthermore, BirdLife is considering to survey suspicious pigeon cages with the help of volunteers.

LONG-TERM MONITORING OF A PEREGRINE FALCON (FALCO PEREGRINUS) POPULATION IN SOUTHWEST GERMANY: POPULATION TRENDS AND CURRENT CHANGES OF BREEDING HABITATS

Frank Rau* – Jürgen Becht – Rudolf Lühl

Arbeitsgemeinschaft Wanderfalkenschutz Baden-Württemberg (AGW)
*e-mail: Frank.Rau@agw-bw.de

The recovery of peregrine falcons in the Baden-Württemberg region (Southwest Germany), after their low population in the 1970s is a success story of volunteer nature conservation. By the middle of the 1990s, the peregrine population in the entire Baden-Württemberg region enjoyed stability in the natural cliff habitats, but also in stone quarries as secondary sites. Since the beginning of the twenty-first century, the population has been stable, ranging between 250 and 290 breeding pairs. Based on nest records and habitat information encompassing over 5 decades of uninterrupted, systematic monitoring, the population development, the reproductive success and the spatial distribution of the specie is presented and discussed for the period 1965–2017.

The consistent protection of the breeding habitats also facilitated the recovery of the eagle owl (*Bubo bubo*) after the extinction of the regional population in the 1930s. With a time lag of about 20 – 30 years, the eagle owl also re-established itself through natural immigration and proliferation, with nearly 200 breeding pairs (2015) in almost all parts of the region. As both species compete for dominance in the breeding habitats; in addition, the eagle owl is an immediate predator of the peregrine falcon. However, given that the eagle owl population has in the meantime reached the general size of the peregrine falcon's population throughout the region, and no end appears to their expansion, it can be expected that the population of peregrine falcons is coming increasingly under local and regional pressure, and the population is swinging – under these circumstances – towards a lower level.

These expectations correspond with current observation records, as in a medium-term perspective the population numbers as well as the reproductive records of the peregrines show a moderate downward trend. But subsequent changes in habitat structures and distribution area of peregrine falcons could be interpreted as important aspects the falcon's adaptation to the eagle owl's continuous and cumulative competition. In particular, the records indicate increasing changes in the breeding habitats toward anthropogenic structures, such as buildings, bridges, and recently more and more electrical towers and a general change of a former rock breeding population of the mountainous regions to a progressively urbanised population of the lowlands.

Key words: peregrine falcon, Falco peregrinus, eagle owl, Bubo bubo, population dynamics, breeding numbers, breeding habitats, breeding distribution, recolonisation, competition, species conservation, Baden-Württemberg, Southwest Germany

NESTING HABITAT SELECTION OF PEREGRINE FALCONS IN EASTERN GERMANY – THE STATE OF KNOWLEDGE

Gert Kleinstäuber[1]* – Wolfgang Kirmse[1] – Torsten Langgemach[1,2]

[1] Arbeitskreis Wanderfalkenschutz e. V., Stollnhausgasse 13, D-09599 Freiberg
[2] Landesamt für Umwelt Brandenburg, Staatliche Vogelschutzwarte, Buckower Dorfstraße 34, D-14715 Nennhausen / OT Buckow
*e-mail: gert.kleinstaeuber@t-online.de

Before the extinction of the East German peregrine population there were only two types of nesting habitat: cliffs in the mountains and river valleys in the South, and tree nests of other species in large lowland forests in the North, the latter forming a much larger part of the population. Between both habitat types there used to be a gap of 30 to 110 km without peregrine broods, suggesting the existence of separation mechanisms. However, with hardly any ringing data nothing was known about the strength of this separation and the degree of exchange of individuals between both habitat types.

In 1981, the stepwise recovery of the cliff-breeders started due to release programmes in Western Germany and Saxony. As a new nest-site type buildings were occupied, later steel lattice structures as well. In 1990, a recovery program for the extinct tree-breeders' population started using falcons reared in captivity and later imprinted on the habit of tree-nesting. All released birds and nearly the complete offspring in the wild were ringed since 1990 using habitat-specific ring colours. Individual ring codes on the other leg with black rings for released birds and silver rings for wild-born chicks enabled identification of individuals, additionally. A great part of the ringed nestlings were identified later as breeding birds from far distance by using high-quality telescopes. Until 2014, 355 birds were identified individually and 245 additionally with respect of their habitat colour. On the basis of 600 partly or completely identified birds the choice of nesting habitats depending on the origin of each bird was analysed.

Our results show strongest habitat fidelity in birds originating from cliffs and buildings. Pylon breeders revealed to be a separate tradition line with high fidelity to their steel lattice structures. Habitat type fidelity of tree-nesters was markedly lower in females with shifts to all other nest types, but nearly 100 % in males. Only exceptionally birds from other habitat types joined the tree-breeders. That means the tree-breeders are mainly self-recruiting and suffer from a shift of offspring to other habitat types. This would explain the gap between cliff-breeders and tree-breeders (in absence of broods on buildings and pylons) prior to the extinction of Peregrines in Eastern Germany.

TRANSITION TO INDEPENDENCE AND ONSET OF DISPERSAL OF URBAN PEREGRINES

Giacomo Dell'Omo*

Ornis italica, Rome, Italy
*e-mail: giacomo.dellomo@gmail.com

Fledging falcons must learn from their parents to hunt for preys, therefore there is a period of parental care, which extends for several weeks after the young are ready to fledge, during which the parents continue to feed their offspring. With increasing ability to fly, however fledglings are also exploring areas far from their natal site and their dispersal might be constrained by dependency from the parental care. In May 2017 we equipped with GPS eight peregrine chicks, each from a different brood in Rome, and we monitored the movements of the falcons since their first flights around the nest. Single raised falcons visited their nests repeatedly during several weeks after fledging, whereas birds from larger broods achieved their independence earlier and moved into more distant areas. Movements were in all directions but those towards the South prevailed. In all birds, the first movements, even at large distances, were followed by return to the nest sites, therefore could not be strictly considered dispersal events. There were few hunting events during the first movements and the extent of daily movements decreased when birds could perform their first prey capture and settled in the area. Although tracking for three birds has been discontinued (two birds died and one logger stopped working) the monitoring of the remaining birds is ongoing.

TRENDS OF PEREGRINE FALCON IN NORTHERN SPAIN – RESULTS OF A LONG-TERM MONITORING PROJECT

Iñigo Zuberogoitia[1,2,*] – Lander Astorkia[2] – Iñaki Castillo[2] – Gorka Burgos[2] – Mikel Larrea[2] – Ainara Azkona[2] – Julen Zuberogoitia[2] – Jabi Zabala[3]

[1] Estudios Medioambientales Icarus. Pintor Sorolla 6, 1ºC. 26007 Logroño. Spain
[2] Department of Ornithology, Aranzadi Sciences Society, Zorroagagaina 11, 20014 Donostia, Spain
[3] School of Biological Sciences, University of Aberdeen, Aberdeen AB24 2TZ, UK
*e-mail: zuberogoitia@icarus.es

Peregrine Falcons suffered a severe decline in the fifties and sixties and started to recover in the eighties and nineties. In our study area, Biscay (Northern Spain), the population density was considered one of the highest found in Spain at the end of the nineties. From then, 1997, until today, 2017, we systematically surveyed the peregrine population yearly. We checked breeding territories and used photography, drawings and alphanumeric coloured rings in order to individually identify territorial birds every year. During this period the population suffered a slow decline, losing 20% of the territories in two decades. Previously to the beginning of the population decline, peregrines suffered consecutive years of low productivity due to adverse spring weather conditions. Rainfall during April caused high mortality rates of nestlings. Simultaneously, in 2007 a virulent disease started to infect territorial peregrines and since them we registered at least the death of eight breeding adults, although we suspected that the real number might be much bigger. Moreover, the laying dates of peregrines suffered a continuous delay, reaching ten days of difference at population level in these two decades. Juvenile females laid significantly later than adults, but there were no enough variations in juvenile proportion to explain the total delay. What is more interesting, laying dates showed a high inter-annual repeatability in females which may be affected for external sources, such as mate changes. Our results suggest that climate variations during early spring may condition the breeding behaviour of peregrines, their productivity, the likelihood of being affected by diseases and it is affecting the trade-offs between floater and territorial populations, territory occupancy and finally, the population trend.

Key words: laying date, occupancy, rainfall, repeatability, virulent disease

THE PEREGRINE FALCON IN THE VOLGA-URAL AND ALTAI-SAYAN REGIONS OF RUSSIA

Igor Karyakin* – Elvira Nikolenko – Rinur Bekmansurov – Alexey Pazhenkov – Ludmila Zinevich

Russian Raptors Research and Conservation Network
*e-mail: ikar_research@mail.ru

Russian Raptors Research and Conservation Network conducts regular monitoring of the largest breeding groups of the Peregrine Falcon (*Falco peregrinus*) in Russia. To 2017 477 breeding pairs (bp) of Peregrines have been registered in the Volga-Urals and 172 bp in Altai-Sayan regions and population numbers continuously increase last 30 years. Now in mountain-forest zone the population number has reached optimum value: at the beginning of XXI century the Peregrine inhabits all cliffs suitable for nesting and starts using suboptimal territories (bluffs, quarries) and expanding to similar biotopes of forest-steppe and forest plain territories. In Volga-Urals the peregrine expansion goes along rivers to plain forests, where it inhabits different types of sand and glue bluffs. Similar situation is observed in Altai-Sayan region. The distribution of peregrine falcons is regulated mainly by predators (the Eagle Owl *Bubo bubo*) and rivals (the Saker Falcon *Falco cherrug* in Altai-Sayan region). In case of any negative tendencies in predators or rivals populations, the Peregrine increases in numbers and occupies their empty nesting territories achieving a high density – up to 2.0 pairs per 100 km². At the same time new nesting stereotypes appear in rock-nesting groups – nesting on power lines, city buildings and other anthropogenic constructions in both regions, and on trees in Altai-Sayan region.

Modern number of the Peregrine Falcon in European part of Volga-Ural region (920 000 km²) is estimated in 1200 (1100–1300) bp, trend for last 10 years is +20 % (in 2007 numbers was estimated in 900–1000 bp; Karyakin, Pazhenkov, 2009). Modern Peregrine's numbers in Altai-Sayan region (750 000 km²) is estimated in 1100 (1000–1200) bp, trend for last 8 years is +25 % (680–1060 bp in 2009; Karyakin, Nikolenko, 2009).

CURRENT STATE OF THE PEREGRINE FALCON IN YAKUTIA

Isaev A.P.[2] – Solomonov N.G.[2] – Gabyshev V.Y.[1]* – Sleptsov S.M.[2]

[1] North-eastern Federal University,Russian Federation
[2] IBPK SB RAS (Yakutsk, Russia)
*e-mail: gabyshev9403@gmail.com

The peregrine falcon (*Falco peregrinus*) is a common and characteristic avian predator inhabiting both taiga and tundra zones in Yakutia. The number of peregrines in the tundra is much higher than in the forest tundra region. Until the 1960s, the number of pairs had no changes showing a density of one pair/45-125 km. In some places pairs were seen in every 15-25 km. In the 1970s a sharp population decrease was observed, especially in the tundra region followed by an increase.

In "Kytalyk" reserve, all suitable habitats are occupied by the falcons. On our study region, 13 nests were found with an estimated nesting density of 2.2 pairs / 100 km². Of the 13 pairs of peregrine falcons recorded in the area, at least two nested during our research from 2001 to 2016.

In the tundra the population is stable, but in other areas populations are either declining or disappearing from former habitats.

In the taiga region between the 1920s and mid-1960s, peregrine falcon was numerous on the cliffs of Lena River, nests were observed in every 4-5 km on average. In the middle course of the Vilyuia River, nests were observed every 12-15 km and in the middle part of the Adychi River, nests were seen in every 15-20 km. Along the upper Lena, upper Vilyui and middle Kolaisky Valley nests were more rare. In the forested valleys of the Olekma-Charsky plateau peregrines were very rare.

A population decrease was observed in the 1970's, when in the valley of the middle Lena River peregrine falcons were found only on the coastal rocks in the mouths of large tributaries (0.8 to 1.4 pairs/10 km). In the late 1990s to early 2000s, the population along the middle section of Lena River began to recover.

In June - August periods between 2013 and 2016, we surveyed the peregrine population in the middle section of Lena River (along 910 km). Egorov (1959) conducted a survey in the region along the river (in 180 km length) in 1953-55. That time the number of pairs was 2-2.5 pairs/10 km, while we found now only 1-1.5 pairs in the same area. At Point Besti, 5 pairs/10-12 km were recorded in the beginning of the 1950s. We currently recorded only one pair. From the village of Tinnaya to the village of Kytyl-Jura, peregrines can be found in every 30-50 km. On the rocky banks of the Lena River, in the section from the village Kytyl-Jura to the village Bulgunyahtakh, 0.5-1.5 pairs/10 km was found.

In many areas of Yakutia, peregrine falcon observations are rare and therefore special studies are needed to obtain information on numbers and distribution. This work was carried out within the framework of the IBPC SB RAS program No. 0376-2016-0002.

FALCONRY AND RESTORATION OF PEREGRINE FALCON POPULATION IN POLAND 1990-2017

Janusz Sielicki[1]* – Sławomir Sielicki[2]

[1] Conservation Officer, International Association of Falconry and Conservation of Birds of Prey
[2] Society for Wild Animals "Falcon", Osiedlowa 1, 87-800 Włocławek, Poland
*e-mail: sielicki@iaf.org

The tree-nesting population of the Peregrine Falcon *Falco peregrinus peregrinus* formerly inhabited a large part of Central and Eastern Europe. Its range covered northern-eastern Germany, eastern Denmark, Poland, southern Sweden and Finland, the Baltic States, Belarus, northern Ukraine and the lowlands of Russia up to the Ural Mountains. In 1950s Peregrine populations drastically decreased through its whole worldwide range, because of environmental contamination (mainly Persistent Organic Pollutants, including DDT). Some populations became extinct, including the whole tree-nesting European population. The last tree nesting Peregrine pair in Poland was found in 1964.
Falconers started to breed Peregrines and developed methods for intensive breeding and reintroduction, at first in the U.S., then in Germany and other countries. With the ban on DDT in most countries, the situation of the Peregrine began to improve and populations that survived the crisis began to rebuild.
Reintroduction significantly accelerated the restoration process in many countries; some populations were restored from absolute zero. Unfortunately, the tree-nesting population did not begin to regenerate naturally and so the only way to restore it was reintroduction.
Falconers started to breed Peregrines at the end of the 1970s. Reintroduction in Poland started in 1990 and was conducted mainly in forest areas, in mountains (Pieniny) and cities (Warszawa, Kraków). The first breeding attempt of Peregrines was in Warsaw in 1998, with first success in 1999. A population gradually built up in cities and mountains in south.
The total number of Peregrines released in Poland since 1990 was 981. In 2017, there were eighteen breeding pairs in cities and fourteen successful pairs produced a total of thirty-seven juveniles. In addition, there were breeding pairs in Polish mountains.
Current reintroduction programme is managed by the Society for Wild Animals "Falcon" since 2010. In 2010–2017 a total of 627 young Peregrines were released in lowland forests in Poland.
The first chicks from a tree nest were ringed in 2012. In 2017 eight pairs were known and two more suspected to breed on trees and seventeen chicks were recorded.
The recovery of tree-nesting population is based on the idea of imprinting on place of birth. That proved to be successful with established and growing population in Germany and seed population in Poland.
Poland is a key country for the success of the tree-nesting Peregrine recovery in Europe. The necessity to conduct the tree-nesting recovery project was included by IUCN/Birdlife International into the Species fact sheet, the Peregrine on a global level has a Least Concern status, except for the tree-nesting population which requires further active conservation actions.

Key words: *Peregrine, reintroduction, tree-nesting, conservation, falconry*

PEREGRINE – POPULATION MODELLING

Janusz Sielicki[1]*

[1] Conservation Officer, International Association of Falconry and Conservation of Birds of Prey
*e-mail: sielicki@iaf.org

Population modelling of large raptors is very difficult, but gives the possibility to optimize conservation strategies and eventual sustainable use level. The most commonly used models are prepared for rodent populations. Unlike rodents however, large birds of prey hold large territories, live in pairs, start breeding at late age, have small numbers of offspring and live long. Additional difficulty is that population data for birds of prey are usually only the number of breeding pairs, not the whole population size, like in case of most mammal studies and models.
In case of Peregrine, a simple arithmetic model was used that included available population data. The model allows measuring the population growth/decline, the level of acceptable mortality and sustainable use. It can be adjusted to any population data available and predict the further population dynamics. The model was used before for modelling Saker populations in the process of preparation of Saker Global Action Plan (Kenward et al 2013, Kovacs et al 2014). The model gives also possibility to estimate population age structure and to calculate other indices necessary for stochastic models. To confirm results for Ireland and Poland stochastic modelling in Vortex 10 was used.
The model fits the Irish Peregrine population data for three points when such data are available – population size in 1970, 2002 and 2012. The harvest of Peregrines at current level of 5 chicks per year was added to the model. The findings are that the safe level of future harvest could be at the level of 10% of chicks born, while the population will grow as it is now. Additionally, the stochastic model showed no risks for the population. The data confirm that 5% level set in the U.S. in the Millsap and Allen 2006 work seems to be a very conservative and safe.
Similar work was done on Polish reintroduced Peregrine population. The indices predict continuous growth of population. The numbers of known nests now are under the calculated figures resulted from modelling, so it is likely that there are more nests in the wild which were not found yet.

INTEGRATED MODELLING OF THE DYNAMICS OF A WESTERN EUROPEAN PEREGRINE POPULATION OVER HALF A CENTURY

Marc Kéry[1]* – Gabriel Banderet[2] – René-Jean Monneret[3] – Michael Schaub[1]

[1] Swiss Ornithological Institute, Seerose 1, 6204 Sempach, Switzerland
[2] route de la Cure 27, 1470 Lully, Switzerland
[3] Moulin du Haut, 39400 Arlay, France
*e-mail: marc.kery@vogelwarte.ch

We modelled the dynamics over more than half a century (1960-2015) of a population of the formerly endangered peregrine falcon (*Falco peregrinus*) in the Jura mountains of Switzerland and France. The number of territorial pairs increased from a pesticide-induced low of 20 around 1971 to 260 in 2008 and then declined again, presumably due to predation by an increasing Eagle owl population and poisoning by pigeon fanciers. Fecundity increased in parallel. However, as for other DDT-struck raptor species with population crashes in the 60s, it was unclear whether survival rates were similarly affected. We built an integrated model of the dynamics of our study population that combined three data sets: counts of territorial pairs in March, counts of young in the nest in May and a mark-recovery data set from 1800 ringed chicks. Our model distinguished two age-classes and expressed the changes in the observed number of pairs as a function of age-specific demographic rates of survival and fecundity. The latter rates were also directly informed by the ring-recovery and the chick count data. Some key results of our modelling were opposing trends of survival in juveniles and adult birds, with a decline in juveniles, but an increase followed by a decline in adults. Importantly, only an integrated analysis allowed us to separately estimate both survival and recovery for both age-classes and resolving the confounding present when all birds are ringed as chicks.

INFLUENCE OF THE EAGLE OWL ON THE PEREGRINE FALCON POPULATION IN NORTH RHINE-WESTPHALIA

Martin Lindner* – Bernd Bäumer

Arbeitsgemeinschaft Wanderfalkenschutz Nordrhein-Westfalen (Peregrine Protection Working Group of North Rhine-Westphalia)
*e-mail: falkmart@t-online.de

In North Rhine-Westphalia with its area of 34,110.26 km², there were 228 peregrine falcon (*Falco peregrinus*) pairs and 525 to 570 occupied eagle owl (*Bubo bubo*) territories in 2016. Only three of the peregrine falcon pairs still brood on rocks or in quarries. In fact, over the past few decades there have never been more than three to five breeding pairs of peregrine falcon in such sites. Virtually all the larger rocks and quarries were populated by the eagle owl. Even at the few rock sites with peregrine falcon nests, there are cases of predation by eagle owls breeding at the same site or in the vicinity. Other rock sites have been abandoned by the peregrine falcon due to the presence of eagle owls or predation by the eagle owls, which subsequently took over the site completely.
Eagle owls are also increasingly breeding on buildings, on the ground, and on the nests of other large birds. Since 1975, the eagle owl initially only nested on buildings in rural areas, but it is now also colonizing urban areas. Eagle owls are more and more frequently also taking over peregrine falcon nest boxes on buildings. The currently still growing peregrine falcon breeding population on buildings is expected to decline in coming years due to predation by the eagle owl. However, eagle owls do not breed very successfully on buildings and the mortality rate of both adult and young owls is relatively high. Due to the favourable food availability in towns and cities, eagle owls will also increasingly populate urban areas. These statements apply to large parts of Germany. In other areas of Europe, the future usage of buildings as eagle owl breeding sites can be expected to have an impact on the peregrine falcon populations there.
Pictures taken by a camera in a peregrine falcon nest at the Oettinger brewery in Mönchengladbach show the course of a predation by the Eagle Owl in 2016.

PEREGRINE FALCON (FALCO PEREGRINUS) VS SAKER FALCON (FALCO CHERRUG) IN HUNGARY – COMPETITORS OR NOT?

Mátyás Prommer[1]* – János Bagyura[2]

[1] Herman Ottó Institute Nonprofit Ltd.
[2] Magyar Madártani és Természetvédelmi Egyesület/BirdLife Hungary
*e-mail: prommerm@hoi.hu

Hungary hosts two large falcon species that co-existed for thousands of years and that are now facing new challenges in the changing environment. The ranges of peregrine and saker falcons were never strictly separated. It is likely however, that historically sakers were living rather in the plains and foothill areas, where they could hunt on small rodents on the open pastures. Meanwhile peregrines preferred the forested hills, mountains and river valleys, where small birds were abundant. In some cases, as old records from the medieval times show, the two species used some nesting cliffs alternately.

As rifle started to dominate in hunting, birds of prey became targets of small game hunters and it remained so until the mid-1900s. In addition, falconry was re-established in Hungary in the early 1900s and both species were under pressure by falconers. Rapid industrialisation after WWII introduced the problem of electrocution. The greatest negative factors of all however, were organochlorine pesticides (DDT). Peregrine disappeared from Hungary as a breeding species in 1964 and saker population also collapsed. The latter disappeared from the plains and bred exclusively in the hills and mountains, occupying mainly the abandoned peregrine eyries.

In 1997 then, peregrines returned to Hungary as a late result of the ban on organochlorine pesticides and the subsequently increasing peregrine population in Europe. Sakers however, started to leave the hills and mountains much earlier. The main reason was that grazing stopped on large areas including foothills, thus ground squirrel (*Spermophilus citellus*) the most important prey species of sakers in Hungary disappeared from the areas close to nesting cliffs. The species disappeared from large areas and instead, sakers gradually shifted to pigeons and voles in order to survive. Decades of legal protection, active conservation and public awareness raising work also contributed to bringing sakers back to the plains. In 1990s corvids learnt to build nests on transmission line pylons opening an almost unlimited nesting possibility. That was the final push for sakers to return to the plains again. The last cliff breeding Saker pair was recorded in 2006 in Hungary, but most cliffs were emptied already in the 1990s.

Thus, there has been no real competition for nest sites and the moment, no real competition for food sources either.

The future may bring new challenges, as nowadays sakers use pigeons as a major food source and as peregrines started to occupy artificial nest boxes installed for sakers.

STATE AND DYNAMICS OF THE PEREGRINE POPULATION IN HUNGARY AFTER TWENTY YEARS OF THE COMEBACK – NEW CHALLENGES

Mátyás Prommer[1] – János Bagyura[2] – István Lotár Molnár[3]

[1] Herman Ottó Institute Nonprofit Ltd.
[2] Magyar Madártani és Természetvédelmi Egyesület (BirdLife Hungary)
[3] Pilis Természetvédelmi Egyesület
*e-mail: prommerm@hoi.hu

Peregrine falcon (*Falco peregrinus*) has a distinctive place among birds of prey. While saker falcon (*Falco cherrug*) played an important role in the (pre-Christian) Hungarian mythology and it was a "training bird" for beginner falconers in the medieval times, peregrine falcon was "*the Falcon*" for trained falconers. Thus, for obvious reasons, nest sites of peregrines were recorded and monitored already in the Middle Ages. Steps carved into the cliffs to nesting ledges still can be found in some hills and there are a number of cliffs named after falcons. The spread of firearms caused falconry to cease in about the 18th century and peregrines became just like other birds of prey – enemies of small game hunters. In the early 1900s then, Hungarian falconry was re-established with British and Pakistani assistance and it has been existing since then more or less uninterrupted.

Despite its former popularity, there is no information about the size of the peregrine population before 1949. The first countrywide survey in 1949-1950 estimated the population to 19 pairs. DDT and organochlorines wiped out the Hungarian population. The last successful breeding was in 1964 and the chicks were taken from the nest by falconers.

No re-introduction programme took place in Hungary and it was not until 1997, when the first breeding pair was observed after 33 years. The population in Hungary was gradually developed to more than 70 pairs in 2017 and it is still increasing. We keep recording the comeback of the species since its return by monitoring nests, identifying breeding adults and ringing/colour-ringing chicks. We found that the bulk of the Hungarian population (northern and central Hungary) has close links to the Slovak population (*F. p. peregrinus*), but the pairs in South Hungary may be linked to the Croatian population (*F. p. brookei*). Juveniles may roam in the Pannonian basin and beyond, but usually they try to establish an eyrie in the region of fledging. They nest on natural cliffs or in abandoned quarries. No nesting Peregrines was found in cities yet, but there are pairs nesting on trees. There are an increasing number of pairs nesting in artificial nest boxes on power line pylons built for sakers, which may result in conflict of interest in longer term. Colour-ringing shows that peregrines are very adaptive as for nest site selection: all pylon-nesting peregrines fledged from cliffs. Increasing number of peregrines (including migratory and wintering individuals) generate conflicts with pigeon-fanciers.

TERRITORY OCCUPANCY AND BREEDING SUCCESS OF PEREGRINES AT VARIOUS STAGES OF POPULATION RECOVERY

Michael J. McGrady[1]* – James E. Hines[2] – Chris Rollie[3] – George D. Smith[4] – Elise R. Morton[5] – Jennifer F. Moore[5] – Richard M. Mearns[4] – Ian Newton[6] – Oscar E. Murillo-García[5] – Madan K. Oli[5]

[1] International Avian Research
[2] US Geological Survey
[3] Royal Society for the Protection of Birds
[4] Scottish Raptor Study Groups
[5] University of Florida
[6] Institute for Terrestrial Ecology
*e-mail: mikemcgrady@hotmail.com

Organochlorine pesticides disrupted reproduction and killed many raptorial birds, and contributed to population declines during the 1940s-1970s. We sought to discern whether and to what extent territory occupancy and breeding success changed from the pesticide era to recent years in a resident population of Peregrine Falcons (Falco peregrinus) in southern Scotland using long-term (1964 – 2015) field data and multi-state, multi-season occupancy models. We found that Peregrine territories that were occupied with successful reproduction in one year were much more likely to be occupied and experience reproductive success in the following year compared to those that were unoccupied or occupied by unsuccessful breeders in the previous year. Probability of territory occupancy differed between territories in the eastern and western parts of the study area, and varied over time. The probability of occupancy of territories that were unoccupied and those that were occupied with successful reproduction during the previous breeding season generally increased over time, whereas the probability of occupancy of territories that were occupied after failed reproduction decreased. The probability of reproductive success (conditional on occupancy) in territories that were occupied during the previous breeding season increased over time. Specifically, for territories that had been successful in the previous year, the probability of occupancy as well as reproductive success increased steadily over time; these probabilities were substantially higher in recent years than earlier, when the population was still exposed to direct or residual effects of organochlorine pesticides. These results are consistent with the hypothesis that progressive reduction, followed by a complete ban, in the use of organochlorine pesticides improved reproductive success of peregrines in southern Scotland. Differences in the temporal pattern of probability of reproductive success between southeastern and southwestern Scotland suggest that the effect of organochlorine pesticides on peregrine reproductive success and/or the recovery from pesticide effects varied geographically and were possibly affected by other factors such as persecution.

Key words: multi-state, multi-season occupancy models; nesting success; pesticide-related population decline; population dynamics; reproductive success; territory occupancy

EXTREME TERRITORIAL AGGRESSION BY URBAN PEREGRINE FALCONS TOWARDS COMMON BUZZARDS IN SOUTH-WEST ENGLAND

Nick Dixon* – Andrew Gibbs

Exeter Peregrine Project, Devon, UK
*e-mail: nickdixondevon@aol.com

Peregrine Falcons *Falco peregrinus* breeding on a city centre church in Exeter, in the south-west of England, have been studied in detail since first occupation in 1997. During this period, changes of both male and female resident falcons have been recorded. Following the arrival of a new female Peregrine in 2009, a dramatic change in behaviour towards Common Buzzards *Buteo buteo* on passage over the city was noted.

Buzzards flying over Exeter are attacked by the falcons, especially so when in proximity to the church. We have attempted to document these attacks through our own observations, and information from local residents and wildlife organisations. Additional records have come from wildlife rehabilitators regarding injured Buzzards found in the city.

This paper documents the extreme levels of territorial aggression as demonstrated by the pair of Peregrines during cooperative attacks on Buzzards.

We reveal the unique interspecific behaviour by summarising the number, frequency, timing and outcome of attacks undertaken over a five-year period. We also describe and illustrate the strategy employed by the Peregrines during a typical attack.

We discuss the effect that this territorial aggression may have on the resident Peregrine's breeding success. We also assess the potential for fledged juveniles to learn this behaviour prior to seeking independence.

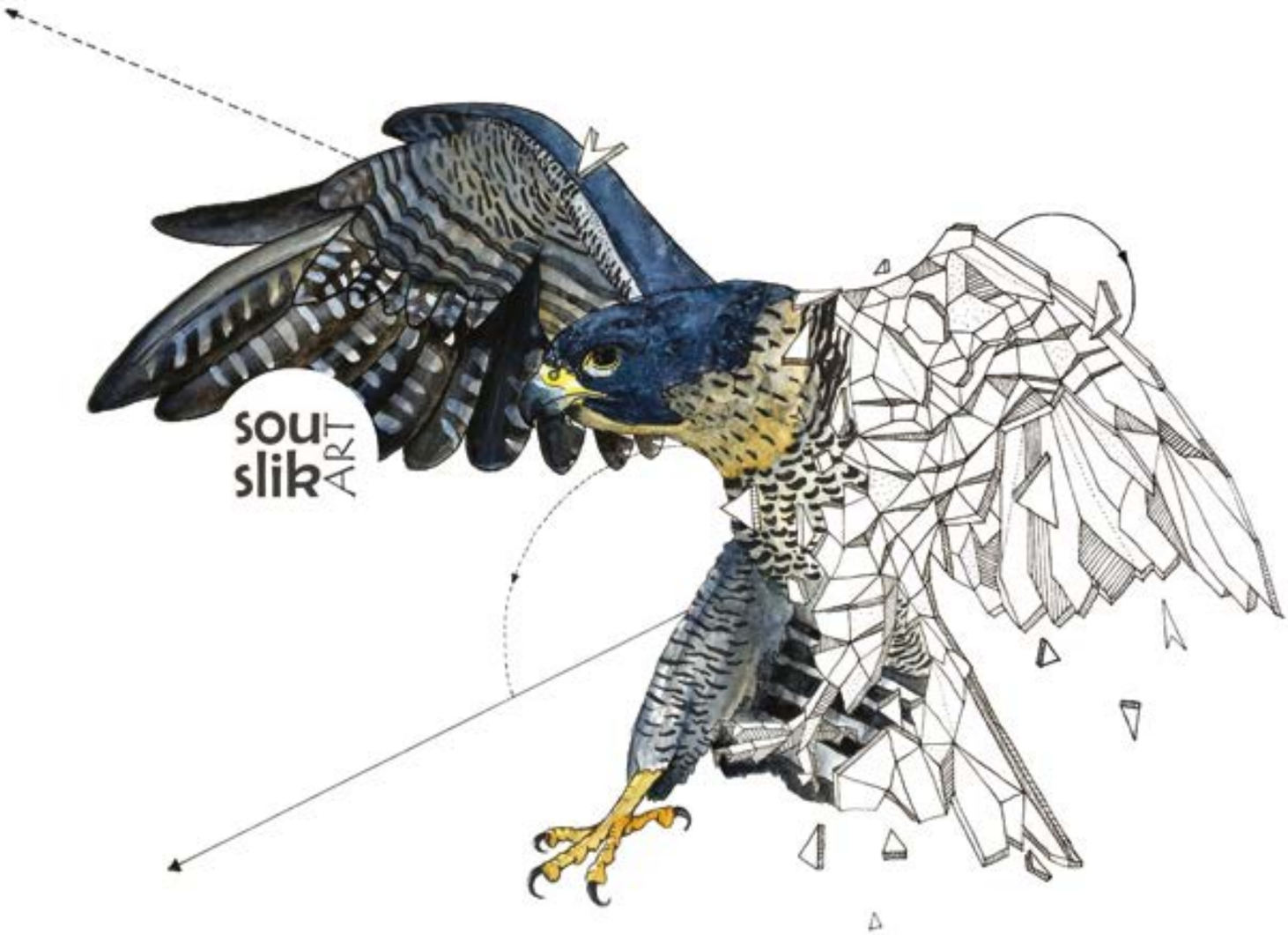
Key words: Peregrine falcon, Falco peregrinus, urban nesting, territorial behaviour, Common buzzard, Buteo buteo, cooperative attack strategy.

COMPARATIVE ANALYSIS OF LANNER AND PEREGRINE TROPHIC NICHE IN THE MEDITERRANEAN

Salvatore Bondì* – Elisa Vitale – Nicola Antioco – Enrico Guzzo – Enrico Schifani – Rosario Mascara – Maurizio Sarà

Section Animal Biology of STEBICEF Department, Palermo University,Italy
*e-mail: salvo.bondi@neomedia.it

Predators are highly sensitive to availability and changes of their prey, which are limiting factors for successful reproductive performances. We studied the diet of the increasing Peregrine falcon (*F. p. brookei*) and the declining Lanner falcon (*F. b. feldeggii*) populations in Sicily. The two species coexist in the same habitats of this large Mediterranean island and require similar feeding resources. We described the type and diversity of prey taken by both species in order to understand whether differences in foraging ecology could explain their diverse population status. During 2014-2016, we collected prey remains and pellets in 15 Peregrine and 6 Lanner nests and we compared the current diets with past data from Sicily (Peregrine: 1978-81; Lanner: 1981-88). We identified 805 Peregrine and 250 Lanner prey. Prey remains per Peregrine nest was on average higher (55.3±28.6) than per Lanner nest (42.0±25.6). Peregrine confirmed to be strictly ornitophagous (100% of prey) while Lanner preyed on birds (92.9%) and also on small mammals (4.0%) reptiles (2.4%) and arthropods (0.8%). The average avian prey of Peregrine is smaller (97.7 g) than that of Lanner (122.5 g). Columbidae, starlings, magpies formed the bulk of prey in both species; swifts and orioles were important prey in Peregrine, while rabbit gave a significant contribution to prey biomass in Lanner. Currently both species are preying upon the collared dove a taxon not present in past '80 diets. The comparison of trophic diversity showed some striking differences, as Lanner in the past preyed upon much more taxa (S_{past} = 55 vs $S_{current}$ = 33) while the reverse occurred in the Peregrine (S_{past} = 38 vs $S_{current}$ = 63). A similar figure occurs also for the alpha-diversity index, while the Simpson (1-D) diversity dropped in the current Lanner diet (0.83) respect with the past Lanner, current and past Peregrine diets (all Simpson values > 0.90). The past/current diet overlap, as showed by the Whittaker index, was generally medium in both species (Peregrine = 0.44; Lanner = 0.48) and across species (past Peregrine/Lanner = 0.42; current Peregrine/Lanner = 0.48). Both species are responding to change of habitats and prey populations (e.g. more predation upon wood pigeon, collared dove, etc) with the more flexible and aerial-hunting Peregrine performing better than the Lanner in altered agro-ecosystems.



2018

January

SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

February

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			

March

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

April

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

May

SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

June

SUN	MON	TUE	WED	THU	FRI	SAT
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

July

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

August

SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

September

SUN	MON	TUE	WED	THU	FRI	SAT
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

October

SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

November

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

December

SUN	MON	TUE	WED	THU	FRI	SAT
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

NATAL DISPERSAL OF FIRST-WINTER PEREGRINE FALCONS

Salvatore Bondi* – Enrico Guzzo – Rosario Mascara – Laura Zanca – Maurizio Sarà

Section Animal Biology of STEBICEF Department, Palermo University,Italy
*e-mail: salvo.bondi@neomedia.it

Quantitative information about natal dispersal is available for many species, usually focused on their long-distance migration. Basic information on non-migrant Peregrine falcons is virtually lacking, despite the amount of scientific data on this species, and the sensitivity of this stage in the Peregrines' life history. Information on movements is crucial for the definition of young post-fledging areas, the behaviour of floaters and also gives key information about juvenile mortality.
Thanks to satellite telemetry, we were able to provide data about the destiny, movement and habitat use during both the phase of post-fledging dependence by parents (PFDP) and the dispersal period of 14 Peregrine falcons in Sicily (Italy), by standardized net displacement (ND) and coefficient of variation (ΔCV) methods. In this preliminary contribution, we considered dispersal until the first winter of life, ended the 28 of February. PFDP extended on average 42±11 days, a phase in which young peregrines moved 3.0±1.6 km from the nest, and explored an area of 1.5 km² on average. Dispersal started when young were about 80±11 days old, on average the 29th of June. Brothers from same nests (n=3) had similar PFDPs and dispersal behaviours. During their first winter, young Sicilian Peregrine falcons did exploration flights mixed to sedentary periods spent in localized territories. During exploration, the average maximum distance from the nest was 109.3±71.6 km and for 12 individuals corresponded to their first long flight, done immediately after the dispersal. Three falcons went outside Sicily and arrived to Aeolian islands and the southernmost Italian peninsula before to come back home after few days. 4 out 14 young falcons died few weeks (22±2 days) after the start of dispersal. Three others falcons showed a peak of increasing distance during the first days of the dispersal period, but after that, they came back in areas close (≤20 km) to their birth-place to spent the winter. The remaining 7 spent their first winter in localized territories far from the nest (>80 km). Only 7 out 14 individuals survived their first winter of life, and six of them have chosen the strategy of far dispersal from the birth-place. The average home range of the 7 overwintering falcons, calculated by kernel density estimation at 95% was 237.3±170.7 km², home ranges were mainly composed of open cultivated areas, like cropland, plus limited extents of natural scrublands. At night the 14 falcons used to roost on cliffs (n=10) and power line pylons (n=4), when sedentary; but exploited arboreal roosts (eucalyptus, olive trees) during exploration trips.

INCREASING PEREGRINE POPULATION IN CENTRAL NORWAY SHIFTING FROM THE COAST TO THE INLAND – A 40-YEAR STUDY

Torgeir Nygård[1]* – Tore Reinsborg[2]

[1] Norwegian Institute for Nature Research, Høgskoleringen 9, 7034 Trondheim, Norway
[2] Grendevn. 4A, 7624 Ekne, Norway
*e-mail: torgeir.nygard@nina.no

A hundred years ago, the peregrine falcon was a rather common breeding bird In Norway. Its breeding range spanned from the outer islands to the upper mountainous regions, from the very south to the arctic areas up to 71 deg. north. However, in 1976, only eight territorial pairs of peregrine falcons were known in Norway, all of them confined to coastal areas, mainly in connection with rich colonies of seabirds. Analyses of addled eggs clearly showed that environmental pollutants, mainly DDT and dieldrin, were the main cause of the decline. Since the ban of DDT in agriculture was put into effect in Norway in 1972, the breeding numbers have increased slowly and steadily. The area of North Trøndelag county, central Norway, has been monitored closely since 1976, when it was rediscovered as a breeding bird in the county, after being missing for 20 years. During 1976-1995, only three pairs were known, but then an increase started, and after 2010, more than 20 pairs are breeding regularly, out of 36 known territories. After the turn of the millennium, some pairs established themselves in fjord areas, and during the last ten years a further expansion inland up the valleys has occurred. The shift in range from the coast to the inland is accompanied by a significant decrease in reproductive rate on the coast, to a degree where almost no chicks have been produced there in the last few years, while it is producing normally in the fjord district and in the inland. The cause is hypothesized to be the decrease in suitable prey on the coast during later years, especially of seabirds such as terns and small gulls, while the availability of medium-sized prey such as thrushes and corvids in the fjord district and in the inland seems to be more reliable.

GENETIC VARIABILITY OF THE PEREGRINE FALCON (FALCO PEREGRINUS PEREGRINUS) INTENDED FOR REINTRODUCTION IN POLAND

Dr. Zuzanna Nowak[1]* – mgr. inz. Sławomir Sielicki[2]

[1] Faculty of Animal Sciences Department of Genetics and Animal Breeding, SGGW / Warsaw University of Life Sciences
[2] Stowarzyszenie Na Rzecz Dzikich Zwierząt „Sokół, Poland
*e-mail: zuzanna_nowak@sggw.pl

Individual genetic profiles and genotype variability in the protected peregrine falcon (*Falco peregrinus*) were studied using microsatellite markers. The species is characterized by a low reproductive rate, a tendency to occupy a large area and low population density. Environmental contamination, reduction of prey and habitat changes were the main reasons for the extinction of the peregrine population in Poland. The reintroduction of the species is based on birds reared in captivity. Ten DNA microsatellite loci originating from 308 individuals were analyzed. The main goal was to test the genetic variability of reintroduced birds. The study based on DNA extracted from peripheral blood. The markers used for analysis are described by Nesje et al. (2000). Multiplex PCR reaction and electrophoretic separation on the ABI 3500 genetic analyzer (Applied Biosystems) were performed. On the basis of the allele and genotype frequency (Structure 2.3.4) we found that the examined individuals are divided only into two genetic groups. All tested birds were characterized by fairly low genetic variability, we found two to nine alleles for the locus, but the average observed heterozygosity was 0.34. The birds were divided into family groups using cluster analysis. The bioinformatic analysis was compared with pedigree data.

POPULATION TRENDS AND DIVERSIFICATION OF BREEDING HABITATS OF PEREGRINE FALCON (FALCO PEREGRINUS) IN THE CZECH REPUBLIC

Václav Beran[1,2]*– Josef Vrána[1]– David Horal[3,4]

[1]ALKA Wildlife
[2]Town Museum Ústí nad Labem
[3]Czech Society for Ornithology
[4]Nature Conservation Agency of the Czech Republic
*e-mail: lutra@email.cz

The population of the peregrine falcon in the Czech Republic recovered from a nearly total extinction during the 1960s and 1980s (0-3 breeding pairs) and the first successful breeding after this era was confirmed in 1995. The increase of the population size accelerated after 2000 and it is still growing despite the limited amount of suitable natural breeding opportunities. There were 89 known pairs in 2016, 70 of them were proven to breed with altogether at least 121 reared young. Several breeding attempts on historical buildings in city-centres were recorded up to 2002 (in Prague and Pilsen), but this breeding habitat was abandoned later. More and more pairs are nowadays breeding on industrial buildings, first breeding on a power plant chimney 300m above the ground was discovered in 2009. There were already 16 breeding pairs found on industrial buildings in 2016 (mainly tall chimneys or cooling towers and power-plant buildings), all of them breeding in nest boxes. The colonization of industrial buildings started in western part of the Czech Republic and continued eastwards every year. Currently, the easternmost colonized building is in Mladá Boleslav. We have no recent tree-breeding pairs and all eight published historical cases are at least doubtful. Most of the observed peregrines ringed abroad came from Germany, indicating a strong influence of German population on restoration of the population in the Czech Republic. Within these recoveries were some of Peregrines released in the tree-breeding population restoration project in Germany and Poland, but all these birds were breeding on rocks.

MIGRATORY MOVEMENTS OF PEREGRINE FALCONS FALCO PEREGRINUS, BREEDING ON THE YAMAL PENINSULA, RUSSIA

Vasiliy Sokolov[1]– Aleksandr Sokolov[2] – Andrew Dixon[3]*

[1]Institute of Plant and Animal Ecology, Ural Division Russian Academy of Sciences, 202-8 Marta Street, Ekaterinburg, 620144, Russia.
[2]Ecological Research Station of the Institute of Plant and Animal Ecology, Ural Division Russian Academy of Sciences, 21 Zelenaya Gorka, Labytnangi, Yamalo-Nenetski District, 629400, Russia.
[3]Emirates Falconers' Club, PO Box 47716, Al Mamoura Building (A), Muroor Road, Abu Dhabi, UAE.
*e-mail: andrew@efcuae.com

In 2009, we fitted satellite-received transmitters to ten adult Peregrine Falcons on their breeding ranges on the Yamal Peninsula, Russia. Autumn departure took place from 30 August to 28 September. Eight birds were tracked to their wintering sites, with migration pathway ranging from 3557 to 8114 km, taking 14 to 61 days to complete. Two birds stopped transmitting during their first tracked autumn migration, and a further two stopped transmitting in their winter ranges. Winter ranges extended from the Atlantic coast of southern Portugal in the west to Kish Island in the Arabian Gulf in the east, and from Krasnodar in southern Russia in the north to South Sudan. The habitats used by wintering Peregrines were varied including coastal habitats, agricultural landscapes, savannah, desert and an urban city. Birds spent an average of 191 days in their winter ranges (range 136 to 212 days, N = 14), and departure on spring migration took place from 4 to 29 April. Spring migration pathways of six birds ranged from 3600 to 8073 km, taking 14 to 47 days to complete. Two birds stopped transmitting during spring migration. Peregrines arrived in their breeding ranges from 10 to 28 May. Peregrines exhibited a high degree of philopatry to their winter ranges, with four birds tracked over three successive migrations until the 2012 breeding season.

THE MEMORANDUM OF UNDERSTANDING ON THE CONSERVATION OF MIGRATORY BIRDS OF PREY IN AFRICA AND EURASIA (RAPTORS MOU) – AN INTRODUCTION

Nick P. Williams*

Convention on Migratory Species Office – Abu Dhabi, United Arab Emirates
*e-mail: nwilliams@cms.int

The Memorandum of Understanding on the Conservation of Migratory Birds of Prey in Africa and Eurasia (Raptors MoU) is an international agreement concluded in 2008 under the auspices of the Convention on Migratory Species (CMS). It covers 93 migratory species of Accipitriformes (Osprey, Hawks and Eagles), Falconiformes (Falcons) and Strigiformes (Owls) that occur in Africa and Eurasia, and encompasses a total of 132 Range States and territories.

The Raptors MoU has already attracted 57 Signatories, including 56 Range States and the European Union and four Co-operating Partners. A Coordinating Unit is based in Abu Dhabi, United Arab Emirates (UAE), which has been generously hosted by Environment Agency - Abu Dhabi, on behalf of the Government of the UAE, since 2009. The first Meeting of the Signatories took place in 2012, the second in 2015, and the third is scheduled for 2018.

Raptors are important biological indicators: fluctuations in their populations can reflect the health, or otherwise, of the environments in which they live. Certain species also provide important eco-system services that offer both financial and human heath benefits. Birds of prey require interconnected networks of suitable habitats for breeding, migration and overwintering. Moreover, migratory species are particularly vulnerable to risk due to natural factors and to interactions with humans in many different countries. Due to the relatively slow reproductive rates in raptors, recovery from population losses can take a long time.

The Raptors MoU is implemented via an Action Plan that promotes an approach based on internationally co-ordinated conservation actions, with the overall aim being to return and maintain these species in favourable conservation status. The presentation will provide an overview of the development of this agreement, including key achievements to date and will highlight current and future collaborative opportunities to conserve this spectacular group of birds for future generations.

PEREGRINE FALCON (FALCO PEREGRINUS) POPULATIONS ALONG THE MACKENZIE RIVER, NWT CANADA 1966-2017

Keith & Heather Hodson*

*e-mail: khhodson72@gmail.com

Out of personal interest the author surveyed the Mackenzie River in 1966 and found 17 pairs of nesting peregrine falcons. Unknown and concurrently another survey by Mr. Jim Enderson found the same number. Working for the Canadian Wildlife Service as a summer student from 1968 to 1974 the river was monitored yearly. In 1970 a low of 12 pairs was found. The numbers began to rise after 1970 and was checked at 5-year intervals by the Canadian Wildlife Service and the Northwest Territories Wildlife Division. In 1985 I resumed the five-year surveys when there were 35 pair found.

In 2010 I began yearly surveys and the latest survey this past year located 65 nesting pairs. It now seems that the rising numbers are leveling off. During surveys all accessible eyries were climbed and nestlings banded. Few band returns have resulted but one band was from Terra del Fuego about 3 months later (8000 miles).

Since 2000 almost 400 prey species remains were collected; 55 species of birds were identified including shore birds, diving ducks, gulls, passerines, and raptors and also one small mammal.

In 2012 and on almost 300 nestlings banded with standard lock - on bands have also been fitted with PIT bands and beginning in 2018 adults will be checked for PIT bands.

Effects of weather, parasites and global warming are discussed.

THE PEREGRINE IN BELGIUM – FROM EXTINCTION TO WORLD STAR

Didier Vangeluwe*

BeBirds – Belgian Ringing Centre
Royal Belgian Institute for Natural Sciences
29 rue Vautier, 1000 Brussels (Belgium)
*e-mail: Didier.Vangeluwe@naturalsciences.be

June 1972, the last pair of generations and generations of Peregrine is observed on a natural cliff of the Meuse valley. The population had inexorably declined since WWII consecutively to pesticides, deliberate killing of adults (including to save war-pigeons form their natural predator) and taking of eggs and nestling for collection and illegal falconry. The species was however never really abundant in Belgium. The highest available estimation is 35 breeding pairs in 1945, all nesting on natural cliffs and rocks in Wallonia. Only 2 breeding cases were ever reported in Flanders lowlands.

June 1994, juveniles recently fledged are observed in the vicinity of the cooling towers of a nuclear plant situated in the Meuse valley 90 km downstream the 1972 site. A network of specific nestboxes installed on industrial towers was probably crucial in the rapid re-establishment of a breeding population in Belgium. Concomitantly a monitoring program based on census and ringing of chicks was organized. They were 13 breeding pairs in 2000, 80 in 2010 and close to 180 in 2017. Since the comeback in 1994, 1832 chicks were ringed.

A first urban pair was found early April 2004 in Brussels cathedral. It raises successfully 3 chicks. It gives a superb opportunity to share the observation of the breeding cycle but also the natural history of the species with the general public. The program “Falcons for Everyone” is born. From 2005 the nest is videoed every spring from incubation to fledging with the images send live to an observation post set for 2 months on cathedral parvis. From 2010 the images are also streamed life on internet. In 2015, the streaming is upgraded to HD and a second camera is installed in order to observe the adults (and later the juveniles) perched on gargoyles. In-between 48 young Peregrines fledge from the cathedral. The current female settles in Brussels in 2006. She has hatch and was ringed in 2002 in Germany at 215 km distance from Brussels and has raised so far 41 chicks. She laid 3 clutches of 5 eggs and is nesting since 2011 with one of her own offspring fledged in 2008.

Within a few years this pair Peregrine becomes a world star with 3.300.000 connexions recorded on the dedicated internet site (www.peregrinefalcons.be) during April-May 2017 only. The program was extended in 2016 and 2017 towards a network of streaming observation of Peregrines nesting in Brussels. Three of the 11 pairs breeding in the capital of Europe (161 km²) are connected to www.peregrinefalcons.be.

Everything nice thus for the Peregrine in Belgium? May be not. The species is becoming so popular that a multitude of city even among the smallest wants to have his own pair of breeding falcons. The trendy way to attract the spotlights! Nestboxes are thus anarchically installed, there on a church, there on a chimney, there on a bridge. It is particularly the case in Flanders were only 2 breeding cases were ever documented during the “historical period”. They are now around 90 including at least 75 relying on nestbox. The installation of nestboxes continues. Is it needed to have so many breeding Peregrines in an area where it was previously virtually naturally absent? The question is open.

POSTERS

URBAN PEREGRINE FALCONS: THE FIRST NEST FOR THE „PINK CITY"

Charlotte Bresson* – Christophe Pasquier – Alain Jean – Jean Ramiere – Sylvain Fremaux

Nature Midi-Pyrénées, Toulouse, France
*e-mail: charlotte.bresson@gmail.com

As in many European cities, the high buildings of Toulouse are favoured by peregrine falcons. The monitoring of the species, coordinated for more than 20 years by the association Nature Midi-Pyrénées and its volunteer network, has confirmed the presence of individuals passing through, wintering or resident. Downtown presence of 2 to 5 individuals of both sexes has been recorded since 2002 and interactions between males and females have been regularly observed since 2005. Despite the multiplicity of possible eyries or nesting sites in Toulouse, and the significant presence of peregrine falcons and dedicated bird watchers, no breeding has been reported.
Since 2016, a pair of peregrine falcons has been observed to the south of the city and monitored. The two individuals were regularly seen on an 80-meter high industrial chimney used as perch for hunting, and as a food cache and night roost. The site, on the banks of the Garonne River, offers a clear view of the south and up to the center of Toulouse, and probably an abundant and varied food resource. Inspired by the development set up by many cities worldwide and motivated by the high breeding success of the neighboring couple on Sainte-Cécile cathedral in Albi (the oldest urban site in France), the association decided to install two nest boxes, including one on the chimney. Thanks to the strong naturalist commitment of the managers of the two buildings and the prospect of limiting the cost of investing in the fight against invasive pigeons, the project has been very well received and quickly realized. In September 2016, the first nest box was placed during renovation work on the industrial chimney. With the support of the council of the Department of Haute-Garonne, the second nest box was installed a month later on a downtown building visited by a female. The pair on the chimney never left the site during the renovation work, and quickly started visiting and appropriating the nest box. While it took no time for the male, it took 10 days for the female to perch on rest cavities on the chimney because of a new flashing security light located nearby. Since then, volunteers have been providing a daily follow-up. At the end of February, a first mating was observed near the chimney and the incubation of eggs began on April 2. The female systematically incubates at night and the male only for short daytime periods with an impatient expectation of being reliefed by his mate. Two visits of other peregrines coming from downtown were observed with, in both cases, a rapid reaction of the couple to see off the strangers. Daily mating continued during changeovers.
Unfortunately, after 1 month on the eggs the female has stopped the brooding and no chick feeding was observed. We have no clues to explain this failure. The two individuals returned rapidly to their usual behaviours but they still regularly present on the chimney. This may be encouraging for a new attempt in the nestbox for next year.

Key words: Peregrine falcon, urban, nest box, nesting, Toulouse

POPULATION BIOLOGY OF PEREGRINE FALCON IN SLOVAKIA

Jozef Chavko* – Roman Slobodník

Raptor Protection of Slovakia, Kuklovská 5, 841 04 Bratislava, Slovakia
*e-mail: chavko@dravce.sk

Peregrine falcon went through substantial population changes during the last two decades in Slovakia. While in the '70s of the last century it practically vanished and its nesting was not proved until 1993, in the last years – since 2013 – more than 100 nesting territories of this species have been recorded. In 2016 the highest number of raised fledglings was reached – min. 210. The highest success rate of this species was recorded in 2006 – 2.87 fledglings / successful, or 2.31 /all the nesting pairs. In the course of the last 15 years, the nesting timing (expressed in the form of the day of a fledgling being hatched) moved slightly to a sooner period. The median of the fledgling's hatching in all the controlled nests (n=248) falls on 17 April, the median of the first hatchings in the individual years falls on 7 April. The soonest hatching was recorded on 31 March, the latest on 24 May. In the last years, the average day of fledglings' hatching is about two days sooner compared to the previous period, however this shift is not statistically conclusive ($p=0.22$; $r^2 = 0.12$). During the monitoring,a nesting of female birds from Hungary was recorded in the territory of Slovakia (2 cases). The phenomenon of a successful nesting of an interspecific mixed triad – *Falco cherrug*, *Falco peregrinus* and *Falco* hybrid – in the Southern Slovakia in the course of 2002 and 2003 is an unusually rare case. Genetic tests have shown that the hybrid was an individual of *Falco cherrug* x *Falco peregrinus*.

GENETIC VARIABILITY IN PEREGRINE FALCON POPULATIONS OF THE WESTERN PALEARCTIC REGION

Chiara Mengoni[1]* – Iñigo Zuberogoitia[2] – Nadia Mucci[1] – Giovanni Boano[3] – Urban Tomáš[4] – Enrico Guzzo[5] – Maurizio Sarà[5]

[1] Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA), Via Cà Fornacetta 9, 40064 Ozzano dell'Emilia (Bo), Italy
[2] Estudios Medioambientales Icarus - Logroño, (Spain)
[3] Museo Civico di Storia Naturale di Carmagnola, Torino (Italy)
[4] Department of Animal Morphology, Physiology and Genetics, Faculty of AgriSciences, Mendel University in Brno
[5] Section Animal Biology, STEBICEF Department, Palermo University (Italy)
*e-mail: chiara.mengoni@isprambiente.it

We analysed variation in ten polymorphic microsatellites and a portion of cytochrome b mitochondrial DNA in 4 populations of peregrine falcon (*Falco peregrinus*), living in northern and southern Italy, Spain and Czech Republic to assess species diversity in the poorly investigated Western Palearctic region. The Spanish population lives in the contact zone between *F. peregrinus peregrinus* and *F. p. brookei*, both the northern Italian and the Czech populations live within the range of *F. p. peregrinus* and the southern Italian is within the *F. p. brookei*. We added to our cytochrome b sequence dataset comprising 81 samples, previously published mitochondrial DNA sequences (n = 31) of English *F. p. peregrinus*, Spanish *F. p. brookei* and 8 peregrine falcon subspecies to outline genetic variation in the region on a worldwide basis. Genetic differentiation in nuclear STR loci was almost absent and it is not possible to distinguish geographical groupings. Regarding mtDNA we identified 17 haplotypes from the 112 peregrine falcon samples, of which 11 were unique and 6 were shared among two or more subspecies. The 68% of sample belonged to 2 shared haplotypes. Overwintering of *F. p. calidus* in Italy was confirmed on a genetic basis. The Spanish and Sicilian *brookei* peregrines split up among haplotypes, but the 35% of Sicilian falcon shared a new haplotype unique for the island. There was neither concordance between cytochrome b variation and taxonomic designation at the subspecies level, nor any phylogeographic pattern in the genetic data. Our analysis, regarding the investigated European region, supported that historical and recent dispersal, combined with rapid morphological evolution, may have originated such a lack of concordance between genetic variation (cytochrome b mtDNA sequences and nuclear STR loci) and phylogeography in peregrine falcon.

SCAVENGING AS A FOOD ACQUISITION STRATEGY BY PEREGRINE FALCONS

Daniel E. Varland[1]* – Joseph B. Buchanan[2] – Tracy L. Fleming[3] – Mary Kay Kenney[4]

[1] Coastal Raptors
[2] Cascadia Research Collective
[3,4] No affiliations
*e-mail: dan.varland@comcast.net

We documented Peregrine Falcon (*Falco peregrinus*) scavenging behavior on the Pacific Northwest coast, Washington, U.S.A., between 1983 and 2015. We observed this behavior during surveys by vehicle, driving on hard-packed sand that was bordered to the west by the Pacific Ocean and to the east by low sand dunes. We captured and banded 192 peregrines; each bird was fitted with a U.S. Geological Survey lock-on band on one leg and a color-coded visual identification band on the other. During 1,109 surveys of three beaches, we made 200 observations of Peregrine Falcons hunting and 170 observations of feeding. Excluding records of Peregrine Falcons with food items of unknown origin (n = 44), we observed falcons with food items 172 times, including prey that we concluded the falcons had captured (n = 77), followed by carrion-feeding (n = 49), and prey that we saw being captured (n = 46). Carrion-feeding represented 28.5% of our observations involving Peregrine Falcons with food items. Our observations of carrion-feeding by Peregrine Falcons included food items representing 19 taxa; the most unusual were salmon (*Oncorhynchus* species), Beaver (*Castor canadensis*), Harbor Seal (*Phoca vitulina*), and two large bird species: Brown Pelican (*Pelecanus occidentalis*) and Great Blue Heron (*Ardea herodias*). Seabirds and waterbirds were the most common food items consumed as carrion (44 of 49 items; 89.8%), whereas other captured or targeted prey were most often shorebirds or other small birds (204 of 277 items; 73.6%). Banded individuals accounted for 69.9% (34 of 49) of our observations of scavenging. We observed scavenging 1-3 times by 21 individuals with confirmed identity through banding; 19 were < 1 yr old and the oldest was 4 yr old. We observed more scavenging by immature falcons even though hunting success was similar between immature birds and adults. We detected no difference in the occurrence of scavenging by season. Given the frequency of carrion feeding, the biomass of carrion potentially consumed, and the apparent predictable presence of carrion on the study area, we conclude that scavenging by peregrines in Washington is neither rare nor opportunistic. Here we show that carrion represents a commonly used and important source of food on the Pacific Northwest coast, U.S.A.

Key words: Peregrine Falcon, Falco peregrinus, scavenging, carrion, feeding, foraging, behavior.

GENETIC STRUCTURE OF AN URBAN PEREGRINE POPULATION

Giacomo Dell'Omo[1]* – Mauro Zampiglia[2] – Daniele Canestrelli[2]

[1] Ornis italica, Rome, IT
[2] Dept. of Ecological and Biological Sciences, Tuscia University, Viterbo, IT
*e-mail: giacomo.dellomo@gmail.com

Urban environment is increasingly important as nesting site for populations of peregrine falcon (*Falco peregrinus*), especially for recovering populations, almost extirpated by the massive use of chlorinated pesticides during the past decades. The new urban settlements provide the chance to study 'real-time' patterns of colonization, breeding behaviour and genetic resources of newly established populations, shedding light on their genetic relatedness, population dynamics and conservation status.

Here, we combine field and genetic data to characterize the recent colonization of the urban area of Rome, since the first observation of a breeding pair in 2005. This pair has been reported to produce offspring of more than 30 individuals in the last twelve years, some of which reached sexual maturity and nested successfully in the urban area, probably mating with newly recruited peregrines. More than 200 fledglings have been counted within the city of Rome since the colonization event in 2005, and more than 40 only in the last breeding season, with 15 currently known breeding pairs.

The aim of this work is to assess the genetic relatedness among the urban peregrines in Rome, and the relative contribution of the first colonizers and of later arrived peregrines to the genetic pool of current population. We analysed blood samples collected from chicks over the last ten years and genotyped individuals at microsatellite loci to infer kinship relationships.

ROME, CITY OF PEREGRINES

Giacomo Dell'Omo[1]* – Francesca Manzia[2]

[1] Ornis italica, Rome, IT
[2] CRFS, LIPU, Rome, IT
*e-mail: giacomo.dellomo@gmail.com

The peregrine falcon has re-appeared in Rome as a breeding species after decades of absence in most of the country as a consequence of the global effects of organochlorine pesticides.
The first breeding pair has occupied a nest box at the University of Rome in 2005 and since then the site has been regularly attended by birds with more than 30 chicks fledged during this period. During the following years other falcons have occupied another three nest boxes placed on tall structures of the city. More than 130 birds have fledged from these four nest boxes during this time period. However, more pairs have also settled in structures without nest boxes. The number of breeding pairs have gradually increased during the first ten years. In some cases birds were the offspring of the initial pair, in others individuals coming from immigration. There has been a steep raise in pairs in the last two years. Thanks to direct observations, reports from the local rehabilitation center, which rescued several young we could localize the breeding sites of many of these pairs. In 2017 at least 15 pairs have bred in Rome. Considering a productivity of 2.8 chicks/nest, not less than 42 chicks have successfully fledged this year.

THE RESULT OF RESCUE OPERATION FOR INJURED PEREGRINE FALCON IN JAPAN WITH FALCONRY TECHNIQUE

Keiya Nakajima[1,3]* – Tomoya Nakajima[1,3] – Kumiko Yamakita[2] – Katsuhisa Matsubara[2] – Adrian Lombard[3]

[1] The Japan Falconiformes Center
[2] Green Animal Hospital
[3] International Association for Falconry and Conservation of Birds of Prey
*e-mail: jfc-keiya@wh.commufa.jp

The Japan Falconiformes Center (JFC) has been engaged in the rescue operation for injured wild birds of prey in Japan since 1982. Recently, it is practiced in cooperation with related authorities such as department of wildlife in prefectural government. Injured birds were found by citizens, then they were carried to JFC by officials of authorities. Suitable treatment was given to birds according to their conditions. Green Animal Hospital supported us on the medical examination, operation and prescription. Fully recovered birds were released to suitable habitat for each species in the presence of officials. Falconry technique was applied to the rehabilitation of recovered birds to confirm the flying and hunting abilities, if it was needed. It is important to prevent death or debilitation by failure of hunting after the release. Falconry technique was also useful for the management of wild birds without unsuitable taming to human on the keeping period. Workshop for officials of authorities has been held by JFC since 2007 to introduce outline of birds of prey and suitable handling of injured birds. It was helpful to improve the quality of the rescue operation.
A total of 372 birds were taken to JFC during 35 years (April 1982 - March 2017). Rescued species were northern goshawk (*Accipiter gentilis*), black kite (*Milvus migrans*), peregrine falcon (*Falco peregrinus*), common kestrel (*Falco tinnunculus*), common buzzard (*Buteo buteo*), Japanese sparrowhawk (*Accipiter gularis*), Eurasian sparrowhawk (*Accipiter nisus*) and others in order of number of birds. A total of 46 peregrines were included in the rescued birds. Six peregrines (13 %) were released after treatment. The release rate was lower than other species such as northern goshawk (37 %) or common kestrel (34 %). The conditions of rescued peregrines were wing fracture, debilitation, wing injury, bruise and others in order of number of cases. The rate of wing fracture (43 %) was higher than in case of northern goshawk (27 %) or common kestrel (29 %). There was no fully recovered peregrine after wing fracture that means that peregrines had severe damage by the crash to something with high speed. 63 % of the peregrines were juvenile. The rate was almost same as other species. It means that young birds have accident after leaving the nest and in the first winter as well known fact. The release rate of rescued birds was improved by workshop for officials and cooperation with authorities. All released peregrines occurred in the period after 2009.

GREENLANDIC PEREGRINES WILL HAVE NORMALL EGGSHELL THICKNESS BY MID 2030'IES

Knud Falk[1]* – Søren Møller[2] – Frank F. Rigét[3] – Peter B. Sørensen[3] – Katrin Vorkamp[3]

[1] www.vandrefalk.dk
[2] Roskilde University Library
[3] Danish Centre for Environment and Energy
*e-mail: knudfalk@hotmail.com

Since it was first shown that DDT caused eggshell thinning and breeding failure in wild peregrine falcon (*Falco peregrinus*) populations, the effects on the eggshell thickness and breeding success in high-trophic level birds have been widely documented. Studies of peregrines and ospreys (*Pandion haliaetus*) in Europe have documented that it took 30 years from DDT was phased out until eggshell thickness was back to normal pre-DDT levels.

In Greenland, the peregrine population has been the subject of long-term studies, and a previous study of eggshell thinning found a significant increase over time (1972-2003) in thickness of eggshell fragments from West and South Greenland. As part of ongoing updates of a previous comprehensive analysis of persistent organic pollutants in peregrine eggs from South Greenland, now covering 1986-2014, we extended the time series for eggshell measurements and reinterpreted data for a 43 year time span. Mean shell thickness was estimated for 184 clutches based on fragments from hatched eggs, and for 56 whole addled eggs from 44 clutches.

During the period 1972-2014 there was a highly significant increasing trend in the average eggshell thickness of 0.25% per year. This corresponds to a change in eggshell thinning from 13.9% to 3.4% in 2014 when compared to pre-DDT eggs collected in Greenland. With the current rate of change, a "normal", pre-DDT shell thickness is predicted to be reached around year 2034. However, a few clutches are still below the critical limit. The slower recovery of the shell thickness in the Greenland population as compared to other studies is likely indicative of the slower phasing out of DDT in the Greenlandic peregrine's wintering grounds in Latin America.

The shell thinning in the Greenlandic population crossed the 17% "danger limit" associated with population declines probably only for a few years, if ever, contrary to the populations of the same subspecies in Arctic Canada and Alaska. The long-term sampling of eggshell fragments allowed us to verify that the peregrine population in Greenland is responding to the gradually reduced exposure to shell-thinning substances.

Principal component analyses of effects on shell thickness of a wide range of persistent organic pollutants measured in the eggs disclose how some of the tested compounds had a correlation with shell thickness, where the effect of DDT and its degradation products dominates over the effect of other substances. These results show that continued measurements of shell thinning serve as a low-cost proxy for monitoring environmental loads of the DDT compounds.

Key words: Arctic, Greenland, DDT, pollutants, egg, shell thinning, monitoring

WEATHER VARIABILITY AFFECTS THE PEREGRINE FALCON (FALCO PEREGRINUS TUNDRIUS) BREEDING SUCCESS IN SOUTH GREENLAND

Linnéa Carlzon[1]* – Amanda Karlsson[1] – Knud Falk[2] – Søren Møller[3]

[1] Halmstad University
[2] www.vandrefalk.dk
[3] Roskilde University Library
*e-mail: linnea.carlzon@gmail.com

Global warming is affecting the Arctic at a much higher rate than the rest of the globe, causing a rapidly changing environment for Arctic biota. Climate change is already causing increased variability and extremes in precipitation. Although the peregrine falcon is a well-studied top predator in the Arctic only a few studies have identified how the changing weather patterns affect the breeding populations. Therefore, in order to understand the effects of climate change on the peregrine's future prospects, we investigated the relationship between weather variability ("extreme weather") and breeding success parameters for the peregrine in South Greenland.

The peregrine population in South Greenland has been studied since 1981, and we defined two variables for comparison with weather data: 'young/known territory' (range 0.8 – 3.1) and 'nest success', i.e. proportion of known sites producing young (range 0.25 to 1.0). Weather data were obtained from two weather stations in the study area available from the Danish Meteorological Institute. From the raw data we calculated four extreme predictor variables: 'extreme temperature', 'extreme precipitation' and 'consecutive rainy days' – and 'extreme weather' combining rain and temperature. Regression analyses showed that the peregrine breeding success (both parameters) is linked to 'extreme weather'; the strongest correlation is with total days in the season with 'extreme weather' affecting the breeding success negatively. Secondly, 'low temperature' and total days with 'extreme weather' during the pre-laying and incubation period also had significant negative correlation with breeding success. Contrary to expectations (and other studies), we found no significant effect of precipitation during the nesting period. Results also indicate that other factors influence the breeding success, as we have a strong downward trend in breeding success recent years but not an increase of extreme weather events during the same period.

Key words: Arctic, Greenland, climate change, reproductive success

DIET SPECIALIZATION IN AN INSULAR POPULATION OF PEREGRINE FALCONS: TRENDS IN LARGE GULL PREDATION

Luke J. Sutton*

School of Biological Sciences, Plymouth University, Drake Circus, Plymouth, Devon UK PL4 8AA
*e-mail: luke.sutton@students.plymouth.ac.uk

Individual diet specialization occurs in many populations of generalist predators, with specific individuals developing specialist strategies in their feeding behaviour. Intraspecific resource partitioning is hypothesised to be common amongst species in higher trophic levels where competition for resources is intense, and as a key driver in breeding success and community structure. Though well-studied in other predators, there is sparse data on ecological specialization in raptors, which are important drivers of community and trophic structure. In this study, the breeding season diet of an insular population of peregrine falcons (*Falco peregrinus*) was determined from indirect analysis of prey remains collected over three years. An unexpected result was the high proportion of large gulls (Laridae), of the genus *Larus,* in the diet of two breeding pairs of peregrines. Large gulls comprised 18.44 % by frequency of total prey recorded and 30.81 % by biomass. Herring gulls (*Larus argentatus*) were the most common large gull prey, with immatures most frequent (67.95 %), compared to adults (19.23 %). Overall, most gulls predated were immatures (80.77 %). Frequency of predation varied between breeding pairs and months, but was consistent over the three years. Most gulls were taken in April (37.17 %), followed by May (19.23 %), with a smaller peak of immature herring gulls taken in August and September. The pattern of regular predation by peregrines on large gulls is a new observation with important implications for understanding individual diet specialization in raptors, and its effect on bird populations and community structure.

Key words: diet, large prey, dietary breadth, ecological specialization, Falco peregrinus

THE DANISH PEREGRINE FALCON POPULATION IS INCREASING

Niels Peter Andreasen[1]* – Knud Falk[2] – Søren Møller[3]

[1] Bird Life Denmark
[2] www.vandrefalk.dk
[3] Roskilde University Library
*e-mail: npa.ulvshale@mail.tele.dk

Denmark being a country with only a few suitable steep nesting cliffs has only harbored a small population of peregrine falcons (*Falco peregrinus*) in historic time. In the previous century the population gradually declined due to persecution, egg and young collection, and pollution. The last breeding attempt in the 20th century occurred in 1972 at Møns Klint in southeastern Denmark. No new breeding attempts were recorded in Denmark until 2001 where a male peregrine from southern Sweden and a female from northern Germany paired up at the location mentioned above. Since then the Danish peregrine population has gradually increased – most rapidly since 2012 – to 19 known territorial pairs in 2016; some of them breeding on man-made structures (nest boxes at bridges and power plants). In this poster, we present detailed information on the reestablishment of the peregrine falcon in Denmark: origin and dispersal, reproduction, and eggshell thinning.

Color banding programs in the neighboring countries (and since 2009 in Denmark) have in some cases made it possible to determine the origin of breeding peregrines. Peregrines originating from neighboring countries have in eight cases been observed breeding in Demark: 3 from Sweden, 4 from Germany and 1 from Poland. Similarly, peregrines banded in Danish eyries have been observed as territorial or breeding in Sweden (2 cases) or at other locations in Denmark (5 cases).

The reproduction measured as number of 'young per successful pair' (reaching ringing age) and 'young per occupied territory' ("productivity") is on average 2.2 and 1.3, respectively, for the entire period 2001-2016. The productivity of Danish peregrines is thus well above the critical limit (1.0 according to USFWS), where concerns may be raised.

Not much is known about contaminant loads in Danish peregrines. One of the eggs from the breeding attempt in 1972 was analyzed for DDT and PCB and the result showed very high values. The eggs from the failed breeding attempt in 2001 were also collected but have not been analyzed. Since the banding program was initiated in 2009 we have collected eggshell fragments whenever possible. Measurements of the eggshell fragments show that the thickness is normal when compared to pre-DDT eggs held at the Zoological Museum in Copenhagen. This indicates that the load of eggshell thinning contaminants, especially DDT and its degradation products, in the peregrines is low and no longer of concern.

Data presented in this poster have been collected by voluntary ornithologists in cooperation with the authors, and the ringing program is approved, coordinated and performed by Copenhagen Bird Ringing Centre, Natural History Museum of Denmark.

RESULTS OF SEVENTEEN YEARS (2000-2017) MONITORING OF AN EXTRA-ALPINE PEREGRINE FALCON POPULATION IN NORTH WESTERN ITALY

Pier Luigi Beraudo*

Via Monviso 7, 12040 Salmour (Cuneo), Italy
*e-mail: igiberaudo@libero.it

In Northern Italy Peregrine Falcon breeds regularly in the alpine area, with few reported cases of in lowland and hilly areas. In the Cuneo province (NW Italy, Piedmont Region) this species bred for the first time outside the alpine area in 2000, in the Langhe hilly area. From that year we started a monitoring work that allowed localizing in these hills and in nearby lowland 13 nesting sites in an area of 1900 km^2. We found an average distance between territories of 7,6 km with a density 0,7 pairs/100 km^2. During eighteen years we recorded 90 successful breeding attempts, and 81 of them led to fledging of 206 young. Average breeding success was 2,54 juv./reproducing pairs. The nests are located on bridges (motorway viaduct and railway bridges) and clay and sandstone cliffs.

DIET COMPOSITION OF PEREGRINE FALCONS IN THE NEST IN PUŁAWY, POLAND

Sławomir Sielicki[1]* – Gerard Potakiewicz[2] – Gregorz Sierocki[2]

[1] Stowarzyszenie Na Rzecz Dzikich Zwierząt „Sokół, Poland
[2] Zakłady Azotowe Puławy
*e-mail: falco@peregrinus.pl

Food composition of peregrine falcons is examined randomly only in Poland during monitoring breeding success and ringing the chicks. Depending on the location of the nest, there are different species of birds and one species of bat in the diet of falcons. Nevertheless, in most breeding sites, the dominant species is the pigeon, especially homing pigeon (*Columba livia f. domestica*). The only exception is the peregrine pair on the chimney of a large industrial plant in Pulawy. In the diet of that pair pigeon also occurs, but in a much lower quantity, than in that of other peregrine pairs we controlled. Monitoring food composition in this particular site is relatively easy due to a number of technical projections on the chimney that are used by peregrines to store food. Those places are easily accessible, so several inspections are carried out every year in different seasons. In the period 2013-2017, fifty-six different species of prey were identified. The smallest was Eurasian wren (*Troglodytes troglodytes*) weighting 7-12 g, the largest was mallard (*Anas platyrhynchos*) weighting 750-1570 g.

MIGRATORY MOVEMENTS OF PEREGRINE FALCONS FALCO PEREGRINUS, BREEDING ON THE YAMAL PENINSULA, RUSSIA

Vasiliy Sokolov[1] – Aleksandr Sokolov[2] – Andrew Dixon[3]*

[1]Institute of Plant and Animal Ecology, Ural Division Russian Academy of Sciences, 202-8 Marta Street, Ekaterinburg, 620144, Russia.
[2] Ecological Research Station of the Institute of Plant and Animal Ecology, Ural Division Russian Academy of Sciences, 21 Zelenaya Gorka, Labytnangi, Yamalo-Nenetski District, 629400, Russia.
[3] Emirates Falconers' Club, PO Box 47716, Al Mamoura Building (A), Muroor Road, Abu Dhabi, UAE.
*e-mail: andrew@efcuae.com

In 2009, we fitted satellite-received transmitters to ten adult Peregrine Falcons on their breeding ranges on the Yamal Peninsula, Russia. Autumn departure took place from 30 August to 28 September. Eight birds were tracked to their wintering sites, with migration pathway ranging from 3557 to 8114 km, taking 14 to 61 days to complete. Two birds stopped transmitting during their first tracked autumn migration, and a further two stopped transmitting in their winter ranges. Winter ranges extended from the Atlantic coast of southern Portugal in the west to Kish Island in the Arabian Gulf in the east, and from Krasnodar in southern Russia in the north to South Sudan. The habitats used by wintering Peregrines were varied including coastal habitats, agricultural landscapes, savannah, desert and an urban city. Birds spent an average of 191 days in their winter ranges (range 136 to 212 days, N = 14), and departure on spring migration took place from 4 to 29 April. Spring migration pathways of six birds ranged from 3600 to 8073 km, taking 14 to 47 days to complete. Two birds stopped transmitting during spring migration. Peregrines arrived in their breeding ranges from 10 to 28 May. Peregrines exhibited a high degree of philopatry to their winter ranges, with four birds tracked over three successive migrations until the 2012 breeding season.

RECOVERY OF PEREGRINE FALCONS IN VIRGINIA

Bryan D. Watts[1]*– Mitchell A. Byrd[1] – Elizabeth K. Mojica[1, 2] – Shawn M. Padgett[1] – Sergio R. Harding[3] – Craig A. Koppie[4]

[1] Center for Conservation Biology, College of William & Mary and Virginia Commonwealth University, Williamsburg, VA 23187-8795, U.S.A.
[2] EDM International, Inc., 4001 Automation Way, Fort Collins, CO 80525, U.S.A.
[3] Virginia Department of Game and Inland Fisheries, 7870 Villa Park Drive, Suite 400, Henrico, VA 23288, U.S.A.
[4] Chesapeake Bay Field Office, U.S. Fish and Wildlife Service, Annapolis, MD 21401, U.S.A.
*e-mail: bdwatt@wm.edu

The peregrine falcon (*Falco peregrinus anatum*) was believed to be extirpated as a breeding species in Virginia by the early 1960s. An aggressive restoration program was initiated in 1978 that involved the release of captive-reared birds including 115 on the Coastal Plain (1978-1985) and 127 in the Mountain physiographic region (1985-1993). The first occupied territory was established and the first breeding attempt was documented in 1979 and 1982 respectively. We have monitored the size, distribution, reproductive rate, and substrate use of the resulting breeding population (1979-2016). The population proceeded through an establishment phase (1979-1990) driven by releases with an average doubling time of 3.1 yrs to a consolidation phase (1991-2016) with an average doubling time of 19.0 yrs. The state supported 31 breeding pairs by 2016. Per capita reproductive rates have increased significantly over the study period from 0.89 (1979-1994) to 1.86 (1995-2016). Average nesting success increased from 67.1% to 80.9% over the same period. Nesting attempts (n = 468) have been documented on dedicated peregrine towers (52.1%), bridges (26.1%), buildings (4.1%), and various man-made structures (13.0%) with only 4.7% documented on natural cliffs. The population appears to be self-sustaining with reproductive rates exceeding 1.5 young/pair every year since 2000. An ongoing management concern is that only 8.9% of known territories (n = 45) identified since introductions and 4.7% of documented breeding attempts (n = 468) have occurred within the historic mountain breeding range.

Editor: Mátyás Prommer and Janusz Sielicki
Paintings: Diána Horkai, Sandra Steinerberger and Szabolcs Kókay
Published by Herman Ottó Institute Nonprofit Ltd.
www.hermanottointezet.hu

The 4th International Peregrine Conference was generously supported by

RAPTORS
MOU

INTERNATIONAL ASSOCIATION FOR FALCONRY & CONSERVATION OF BIRDS OF PREY
IAF
QUOD TOTUM PROCEDIT EX AMORE
MEMBER OF IUCN

ECOTONE®
TELEMETRY


Kikau
2015