

Annual Wildlife Hazard
Management Review
2020



Table of contents

Preface	4
Introduction	5
Airport Wildlife Hazard Management	6
The outbreak of Covid-19 and Wildlife Hazard Management	7
Wildlife strike data	8
Training developments	14
Thessaloniki Airport "Makedonia" expansion	15
On the job experience with the Wildlife Controller	16
Pyrotechnics for wildlife control	16
European Union Aviation Safety Agency – Together4Safety	17
«Dot-to-dot» rare observations	17
Use of advanced technologies	18

Preface



The aviation industry continues to develop its recovery from Covid-19 after the end of a very disruptive year. The future looks very challenging ahead for airport operational performance and there is abundance of uncertainty. Regardless of the difficulties, the health and safety of travelers and personnel remains a top priority for Fraport Greece.

Uncertainty is the new “current normal” and airport operations in 2021 will be more difficult and demanding compared to 2020. Wildlife Hazard Management is of great importance to Fraport Greece. Wildlife strike risk is globally on the rise due to reduced flying activity resulting from the Covid-19 measures. Similarly, to everywhere else, increased presence of wildlife has also been reported by Fraport Greece airports due to air traffic collapse and human absence.

The Annual Wildlife Hazard Management Review 2020 provides an important update of the latest achievements of the operations team, both on a central level at our headquarters and on a regional airport level. Short and easy to read, this report reviews our vital efforts to manage effectively wildlife hazards and mitigate bird strike risks at our airports.

Ilias Maragakis
Chief Operating Officer

Introduction

The Covid-19 pandemic severely impacted upon Europe’s transport sector. Aviation is among the sectors hardest hit by Covid-19. Air connectivity has collapsed worldwide and the demand at Fraport Greece airports has decreased significantly. With less air-traffic and more stay-home orders, a variety of bird species are attracted to the green, quieter areas of the airports. This review aims to communicate the latest best practices in Wildlife Hazard Management at Fraport Greece to a wide audience, including aviation professionals, airline passengers and to all those with interest in sustainable innovative solutions in the aviation industry.

We begin by introducing shortly the fascinating subject matter of Wildlife Hazard Management and aviation safety. We then examine the effects of Covid-19 in wildlife presence and bird control at the airports. We review the wildlife strike statistics for the year 2020 and present the latest developments at Fraport Greece. Finally, we address the use of new technologies in detecting wildlife potentially hazardous to aircraft operations and reducing the risk of wildlife strikes.



Yellow-legged gull, a serious hazard to aircraft operations

Airport Wildlife Hazard Management



Zakinthos Airport "Dionisios Solomos"

The lack of human activity at the airports offers a suitable habitat to wildlife for resting, feeding or breeding. Collisions between bird and aircraft can become regular events. Wildlife strikes pose a threat to aviation safety and a significant cost to the airline industry. A European study concluded that 95% of all strikes occur below 2500 ft.

During spring and autumn, an increased bird activity due to migration leads to more bird strikes, while in summertime,

the presence of young inexperienced birds increases the likelihood of bird strikes from resident breeding species. Most of the struck birds hit the front large parts of an aircraft, such as nose, wings and the engines.

Successful airport Wildlife Hazard Management requires the establishment of a risk management system to identify hazardous bird species, understand their behavior, modify their preferred habitat, assess the risk of bird collisions with aircraft and mitigate these risks by implementing a variety of methods. An integrated approach is needed, together with performance measurement indicators and continuous improvement management techniques – no one solution fits all. At Fraport Greece, all the above is the responsibility of the Wildlife Hazard Management team, which since February 2020 is under the direct support and supervision of the Head of Strategy who is responsible to the Chief Operating Officer.

The outbreak of Covid-19 and Wildlife Hazard Management

The European Union Aviation Safety Agency's (EASA) safety issue analysis has identified the increased presence of wildlife at aerodromes to be one of the most important hazard for National Aviation Authorities, airport operators and airlines to consider. The Fraport Greece Wildlife Hazard Management team has communicated early this hazard to the airports' operations personnel together with clear guidelines on how to manage this situation. Fraport Greece runways and taxiways have been frequently inspected for bird activity, even during days with no traffic at all. There were no reductions due to Covid-19 regarding the detailed recording of the wildlife patrol and control data, the respective documentation and statistical analysis. Bird migration was in progress during the lockdown. Emphasis was given on airport bird monitoring even on days with no traffic so as to keep continuity of data collection, by surveying resident and migratory bird species.

With the use of pyrotechnics and other wildlife control methods, birds have been dispersed with exceptionally good results. These efforts are directed mostly towards big flocks of birds, to avoid having these resting or even breeding at the quiet airside areas. Monitoring has also included parked aircraft to identify any bird nesting attempts. With a series of webinars, Fraport Greece personnel has been frequently informed by the Wildlife Hazard Management team about the necessity to keep monitoring and controlling wildlife. The bird identification and habitat monitoring skills of the airside personnel have been further advanced with the use of distant teleconference means.

At Fraport Greece airports, the implementation of the Wildlife Hazard Management Programs continued unaffected, during the lockdown and the subsequent restart of operations in the summer of 2020. Aircraft safety remains the top priority. Bird control is seen as a continuous process at Fraport Greece and is applied during the high traffic season, as well as during the winter (off-peak) season.



Marsh harrier,
Kavala Airport "Megas Alexandros"



Little egrets, Halikiopoulos lake,
Kerkira Airport "Ioannis Kapodistrias"

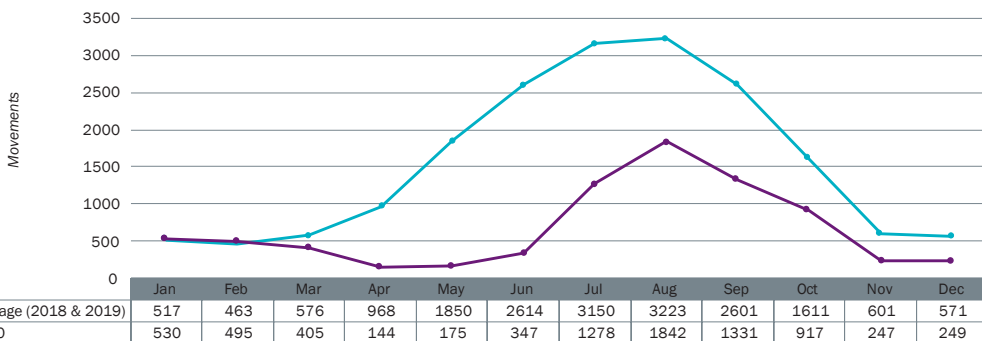


European stonechat,
Rodos Airport "Diagoras"

Wildlife strike data

Fraport Greece's Concession commenced on April 11th, 2017. The reason for the rise in wildlife strikes from 2017 to 2019 is mainly attributed to detailed reporting, rather than increased wildlife strike risk. The development of the reporting culture was the main achievement during the first years of operations. This is mirrored in the number of wildlife strikes reported by Fraport Greece personnel without being perceived by pilots or Air Traffic Controllers. These wildlife strikes refer to dead birds found during runway inspections, with evidence of a strike with an aircraft. The recording of wildlife monitoring and control data and reporting of all possible and confirmed wildlife strikes is of utmost importance to perform a data-based and risk-based wildlife strike risk assessment.

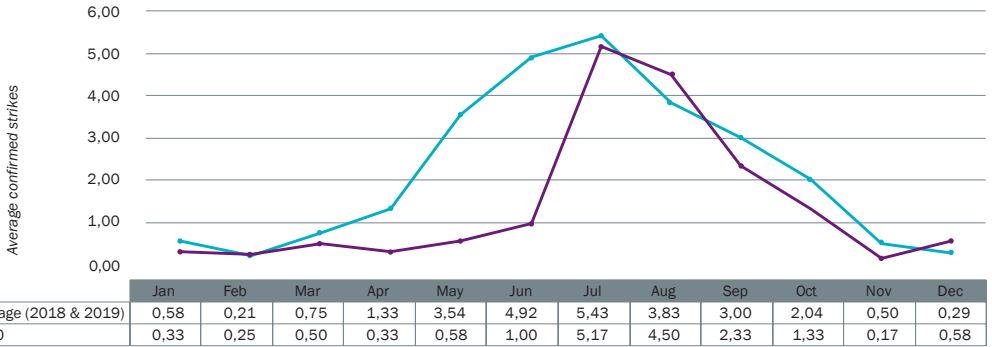
All airports*



*Chania Airport "Ioannis Daskalogiannis" & Aktion Airport are excluded as per the provisions of the Concession Agreement

Average aircraft movements handled, per month, in 2018 & 2019, compared to the monthly aircraft movements, in 2020

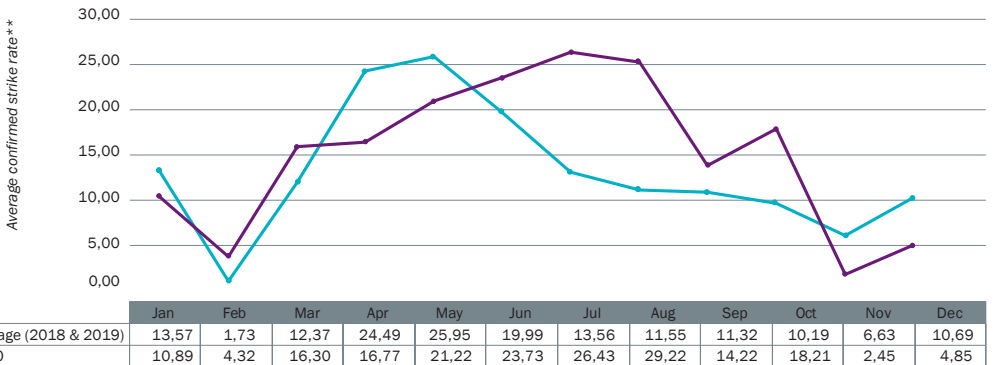
All airports*



*Chania Airport "Ioannis Daskalogiannis" & Aktion Airport are excluded as per the provisions of the Concession Agreement

Average number of confirmed wildlife strikes, per month, in the 2018 and 2019, compared to the number of confirmed wildlife strikes, per month, in 2020. According to the European Union Aviation Safety Agency, any reported collision between a bird or other wildlife and an aircraft for which evidence in the form of a carcass, remains, or damage to the aircraft is found as well as any bird/wildlife found dead at an airport (where there is no other obvious cause of death), it shall be considered to be a confirmed wildlife strike.

All airports*

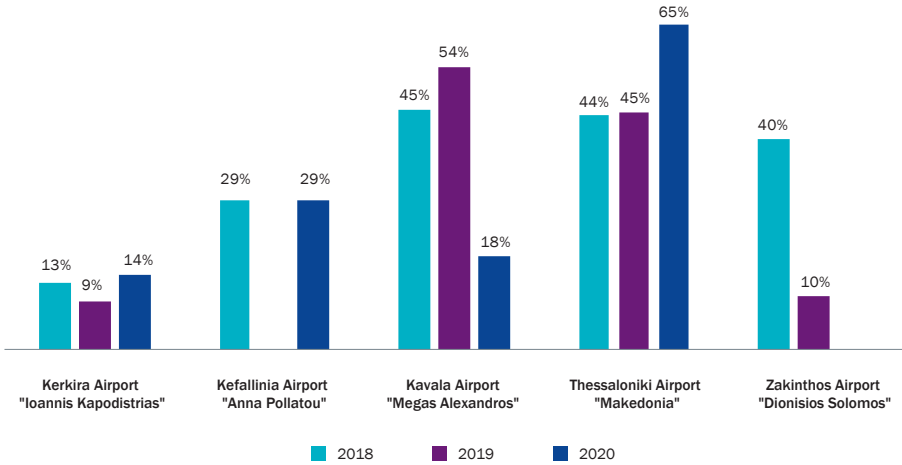


*Chania Airport "Ioannis Daskalogiannis" & Aktion Airport are excluded as per the provisions of the Concession Agreement

** Rate = Confirmed wildlife strikes per 10,000 movements

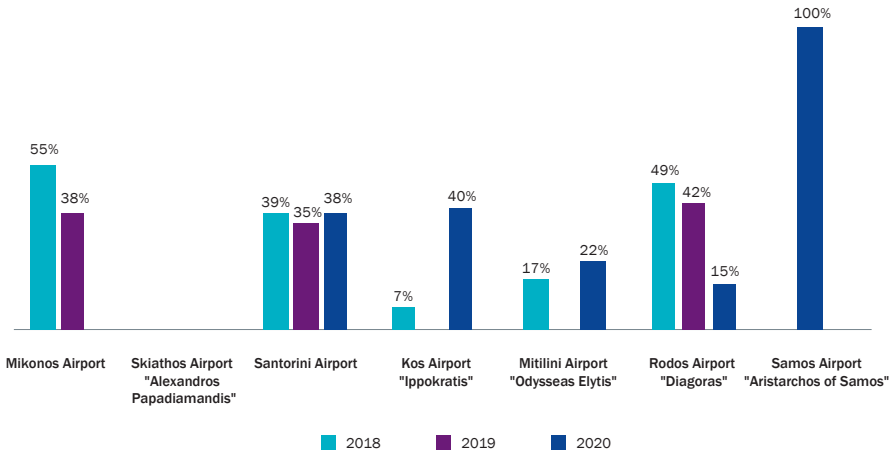
Average monthly number of confirmed wildlife strikes per 10,000 aircraft movements in 2018 & 2019, compared to the monthly number of confirmed wildlife strikes per 10,000 aircraft movements, in 2020.

% Airport reporting, Confirmed wildlife strikes (Cluster A)



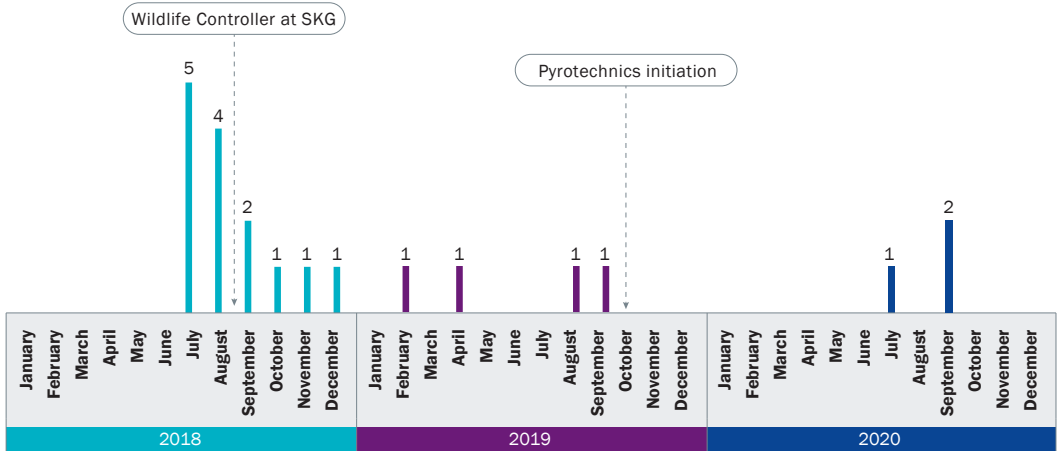
Confirmed wildlife strikes reported exclusively by Fraport Greece Airport Operations personnel (Cluster A), in 2018, 2019 and 2020.

% Airport reporting, Confirmed wildlife strikes (Cluster B)



Confirmed wildlife strikes reported exclusively by Fraport Greece Airport Operations personnel (Cluster B), in 2018, 2019 and 2020.

Duck strikes at Thessaloniki Airport "Makedonia"



Duck strikes at Thessaloniki Airport "Makedonia" in 2018-2020. Mallard is the duck species involved in the 95% of these strikes. The employment of the Wildlife Controller and the use of Pyrotechnics – a novel bird control method– resulted in decreasing the monthly number of duck strikes at Thessaloniki Airport "Makedonia".

The below table indicates the most frequently struck species at Fraport Greece airports during the period 2018-2020.



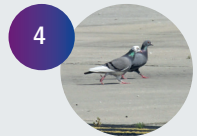
Barn swallow



Yellow-legged gull



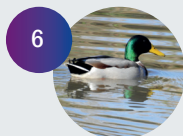
Common kestrel



Pigeon



Eurasian stone-curlew



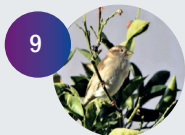
Mallard



Hooded crow



Common house martin

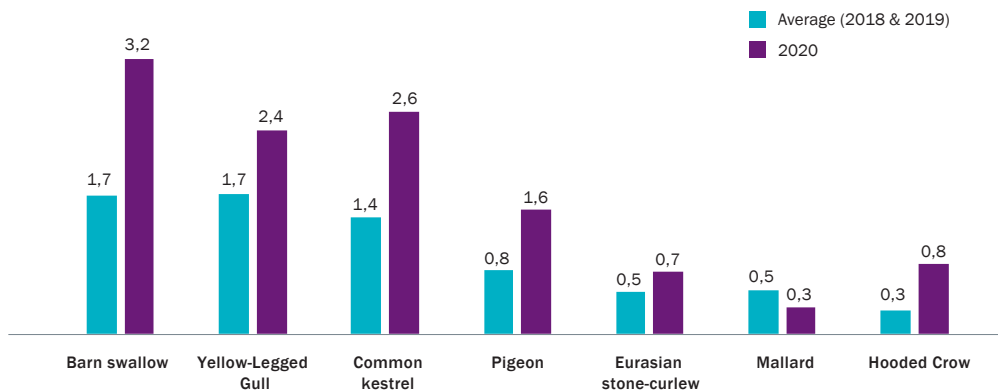


House sparrow



Black-headed gull

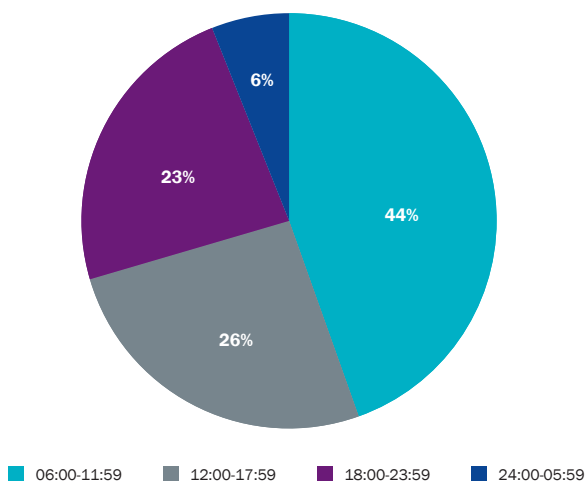
Species' strikes/10.000 movements at Fraport Greece airports



*Chania Airport "Ioannis Daskalogiannis" & Aktion Airport are excluded as per the provisions of the Concession Agreement

Most frequently struck birds. Average number of strikes per 10,000 aircraft movements, in 2018 and 2019, compared to the number of strikes per 10,000 aircraft movements in 2020.

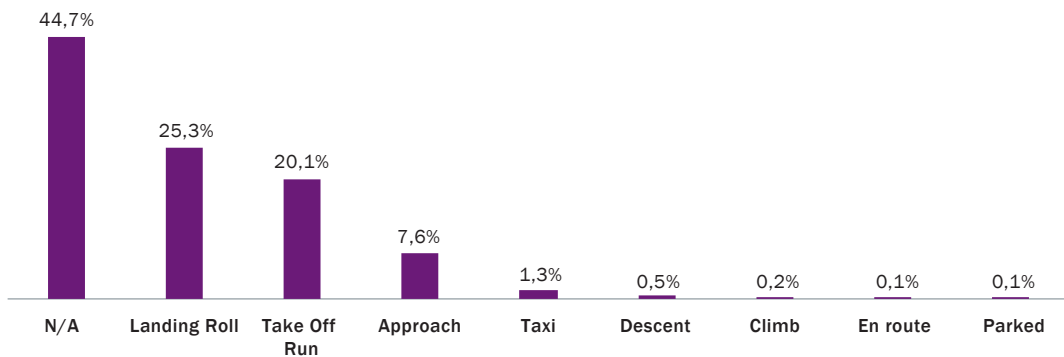
Confirmed wildlife strikes per time segments (2018-2020)



*Chania Airport "Ioannis Daskalogiannis" & Aktion Airport are excluded as per the provisions of the Concession Agreement

Confirmed wildlife strikes per time segments in 2018–2020 indicate that most of the strikes occur between 06:00-11:59AM.

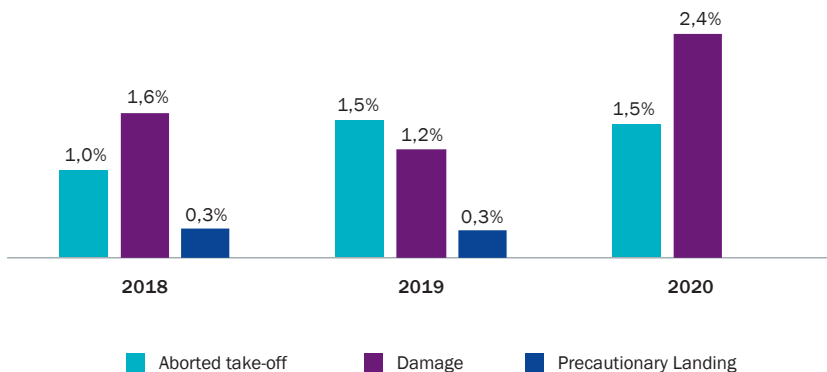
Confirmed wildlife strikes per flight phase (2018-2020)



*Chania Airport "Ioannis Daskalogiannis" & Aktion Airport are excluded as per the provisions of the Concession Agreement

Confirmed wildlife strikes per flight phase in 2018-2020. 44.7% of the strikes are not reported to Air Traffic Control by the flight crew, but are recorded by the Fraport Greece Airport Operations personnel during the runway inspections.

% of wildlife strikes causing effect on flight

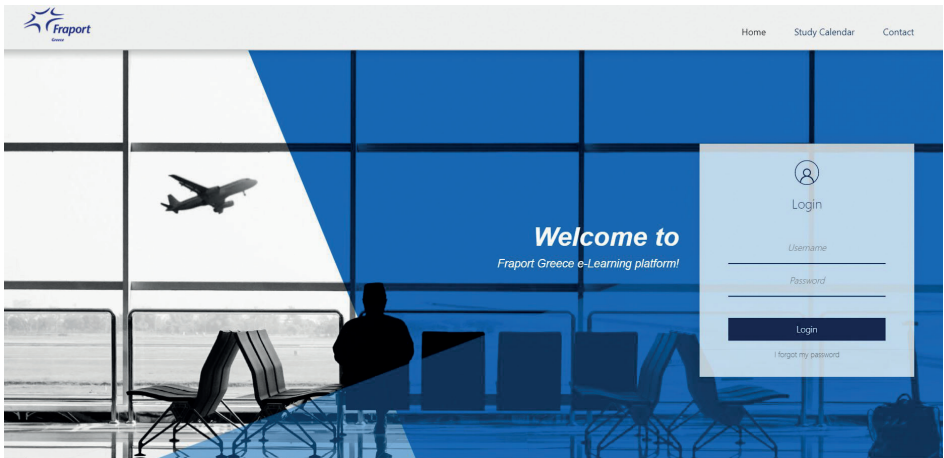


*Chania Airport "Ioannis Daskalogiannis" & Aktion Airport are excluded as per the provisions of the Concession Agreement

Wildlife strikes causing aborted-take off, damage or precautionary landing in 2018, 2019 and 2020.

Training developments

The new reality has led to the fast development of the e-Learning platform at Fraport Greece, an advanced learning system that enables real time and distant virtual learning. The delivery of the official Wildlife Hazard Management training was pilot tested during the lockdown through this platform. The new digital training system is designed with the ability to use many modern learning techniques adjusted to the profile of the Fraport Greece personnel and the specific learning objectives. With the use of the Bloom's Taxonomy framework the training is user friendly and more efficient, while contributing to the life-long learning and development of the Fraport Greece employees. Furthermore, the proficiency checks of the official Wildlife Hazard Management training were conducted at the end of 2020, assessing the knowledge and efficiency of the training provisions.



Fraport Greece e-Learning platform

Thessaloniki Airport "Makedonia" expansion

Thessaloniki Airport "Makedonia" is the biggest and busiest of the 14 facilities managed by Fraport Greece. Major upgrade works have been completed, which include a new terminal, a new fire station, reconstructing the runway and apron areas as well as installing a modern baggage handling and control system. Fraport Greece largest infrastructure investment of about 100 million euros will create a "new era" in Greece's second largest city. Following the certification and compliance check the first operational use of the recently delivered runway 10/28, took place on September 11th, 2020.

Long before the commencement of operations on the new runway, a detailed risk assessment identified hazardous species such as gulls preferring to rest on the extension of the runway to the sea. The construction site was a major attractant for gull species. Intensive bird control efforts on the construction site before the beginning of operations aimed in altering the foraging patterns of gull species and disperse them away from the airport. Nowadays, with a system of two runways the airside operation team proactively inspects the maneuvering area for bird activities and controls wildlife intensively in order to mitigate the wildlife strike risk.

In April 2020, a new wildlife control vehicle was added in the vehicle fleet of the Thessaloniki Airport "Makedonia" airside personnel, exclusively for patrol and bird control. The vehicle is fully equipped for wildlife and habitat surveys at the airside as well as for an extended area of a 1.3km radius from the airport's reference point.



Wildlife control vehicle at Thessaloniki Airport "Makedonia"

On the job experience with the Wildlife Controller

Selected Airside Supervisors (Follow Me car) from several Fraport Greece airports had the opportunity to join for two days the Wildlife Controller “on the job” at Thessaloniki Airport "Makedonia" and get a first-hand experience in bird control at a challenging airport environment. This experience exchange offered a great opportunity to advance their professional skills in bird identification, habitat monitoring techniques, bird control, documentation and reporting. During the first two months of the year and before the Covid-19 outbreak, eight Fraport Greece employees had participated in this project from Kavala, Kefallinia, Kerkira, Kos, Rodos, Santorini and Skiathos Airports.



Horned grebe at lake Volvi

The project has also been extended to increase the awareness of the Thessaloniki Airport "Makedonia" Air Traffic Controllers. Upon their availability and willingness, the Controllers join our wildlife monitoring and control efforts, so as to gain useful insights into a variety of methods and techniques. The project is expected to continue with a combination of field visits, when necessary, and the use of videos and webinars to involve more participants and maximize the benefits of professional experience exchange.

Pyrotechnics for wildlife control

Within a busy working environment with high safety standards, such as at an airport, it is needed to be able to safely deal with hazardous birds quickly and easily. Pyrotechnics have been used for years at airports as an effective tool to deter birds. They produce a loud bang up to 160dB that scares bird away. Pyrotechnics have been used since November 2019 at three Fraport Greece airports as an effective means of mitigating the bird strike risk. The use of pyrotechnics at Kerkira, Thessaloniki and Kavala airports, resulted in birds dispersing quicker and staying away for a much longer period of time than before. Pyrotechnics is a non-lethal bird control method which do not produce Foreign Object Debris, objects that could possibly damage equipment or injure personnel. To avoid bird habituation and to enhance the effectiveness of the dispersal of birds, different methods, such as bioacoustics and pyrotechnics are also combined together.



Pyrotechnics use at Thessaloniki airport "Makedonia"

European Union Aviation Safety Agency

Together4Safety

The Fraport Greece Wildlife Hazard Manager and the Safety Manager have participated in an European Union Aviation Safety Agency collaborative initiative, in a task force named Together4Safety to produce together with other industry partners a guide to support the restart of operations in the Covid-19 pandemic. The document –available online at European Union Aviation Safety Agency's website – provides expert advice on implementing an effective Wildlife Hazard Management Program, bird control and habitat management procedures. It underlines the importance of Wildlife Hazard Management during the return to the operations, as a key part of operating safely throughout the Covid-19 crisis.

«Dot-to-dot» rare observations

November 2019

Two Eurasian dotterels are recorded at Zakynthos Airport “Dionisios Solomos”, placing the first dots on Fraport Greece map of bird species that occur rarely in Greece.



*Eurasian dotterel, Zakynthos Airport
"Dionisios Solomos"*

April 2020

A Cream-colored courser is observed at Rodos Airport “Diagoras”, giving the impression that it would prefer to run rather than fly, in case of danger.



*Cream-colored courser,
Rodos Airport "Diagoras"*

April 2020

A Eurasian dotterel comes again, but this time at Thessaloniki Airport “Makedonia”, placing an additional dot on the map and raising our hopes for further dots in the future.

Use of advanced technologies

The Wildlife Hazard Management team in close collaboration with the Safety Management Department have designed and developed the Concept of Operations for Drone flights at Thessaloniki Airport "Makedonia". This proposal will be submitted to the Hellenic Civil Aviation Authority for the necessary approvals and permissions. The use of drone for Wildlife Hazard Management is expected to bring a "new era" in wildlife and habitat monitoring and enhance the Wildlife Hazard Management services at Thessaloniki Airport "Makedonia". Additional expected benefits cover a wide area of safeguarding, runway inspections, as well as security management. The project is planned to be pilot tested in 2021 and following the successful completion of a drone flying training course and a relevant permission by the Hellenic Civil Aviation Authority.



Drone will be used at Thessaloniki Airport "Makedonia" for airport operations



*Common buzzard,
Kerkira Airport "Ioannis Kapodistrias"*



*Eleonora's falcon,
Rodos Airport "Diagoras"*



*Whinchat,
Thessaloniki Airport "Makedonia"*



*Zitting cisticola, Samos Airport
"Aristarchos of Samos"*



*Pontia edusa,
Thessaloniki Airport "Makedonia"*



*Anacamptis pyramidalis,
Thessaloniki Airport "Makedonia"*

Fraport Greece
10, Germanikis Scholis Athinon str.
15123 Maroussi, Attica

www.fraport-greece.com