



Bird collision with glass surfaces

Causes and solutions

Birds in settlements

Birds have adapted to urban habitats and have always lived with us: Especially in cities and villages, they benefit from a favourable microclimate, structural diversity, and a large food supply. However, human settlements also harbour dangers such as vehicles and large numbers of cats. Glass surfaces pose a particular - often underestimated - danger.

Facts

Bird strike

- ❖ In Germany, an estimated 100-115 million birds collide with glass panes per year (bus shelters, noise barriers, etc. excluded!). This corresponds to 5-10 % of the birds occurring annually in Germany (1.2-2 billion: breeding birds, offspring, migratory birds and winter visitors).
- ❖ In Switzerland, the number of collisions is estimated to be 15 million per year
- ❖ And in Great Britain 100 mill. collisions per year.
- ❖ In Valencia, Spain, 75,000 birds die each year from paddle tennis alone.



The problem is often underestimated because:

- ❖ Approximately 80 % of the birds that fatally collided with windows left no recognisable marks,
- ❖ the collision marks are often inconspicuous and only visible from close up,
- ❖ most strike victims are quickly removed by crows and scavengers
- ❖ Seemingly uninjured birds can have a whole host of injuries that can later kill them. Brain haemorrhages, eye injuries, internal injuries.... It is estimated that approximately 82-85% of all bird strike victims die.



Birds orientate strongly visually

- ❖ Birds can see faster than any human! They have to catch a super-fast insect out of the air as they fly, or dodge small branches swaying or popping up in their flight path. Some birds can see 180 frames per second, while humans can only process about 20 frames per second.
- ❖ Flying birds can only respond quickly to contrasts that they can quickly detect visually. Black and white contrasts are the strongest.
- ❖ Most bird species have "wide-angle" or even "all-around" vision due to their widely spaced eyes. However, their spatial perception (stereoscopic vision) is limited.



Birds cannot recognise transparent or reflective glass as well as plastic panes as obstacles!

- ❖ People learn from an early age to understand glass as a solid, transparent material. They learn to look for clues (window frames, door handles, location on the building) that indicate the presence of glass.
- ❖ Birds have always been able to move freely and are not evolutionarily prepared for glass surfaces. They cannot understand the same visual signals as humans.

The risk of bird strike is often increased by the following factors:

- ❖ The proximity of the window to the vegetation. Birds mistake the reflection of a tree for the tree itself or do not notice the obstacle (window) on the way to the tree.
- ❖ Lamps at night. The light disorients migratory birds or even attracts them.
- ❖ Windows across corners or transparent corridors - all architectural elements through which the landscape behind is visible - are particularly dangerous.



Solutions before construction

- ❖ Avoidance of all clear glass architectural elements through which the landscape behind can be seen. For example, corner windows or transparent corridors,
- ❖ Skylights instead of side windows,
- ❖ Subdivision and structuring of large glass surfaces,
- ❖ Replacement of glass with non-transparent materials,
- ❖ Use of wired glass, frosted glass, patterned, cambered glass or glass blocks.



Subsequent protective measures

- ❖ Fitting an external sunshade, insect screen or stretched net.
- ❖ Printing of discs with patterns (dots, grids, lines) or motifs in sufficient density ("hand rule": unmarked area not larger than the palm of the hand)
- ❖ Curtains, blinds, roller blinds, cord tapes, foil tapes, strip curtains, louvres behind the panes.
- ❖ Company signets, shop window decorations, decorative sprays
- ❖ Avoiding all points of attraction near the windows (no feeding stations, berry bushes, etc.). Place them either 10m away from glass or directly at the pane
- ❖ Direct light sources only to the ground to avoid attraction effects.

!! Attention !!

!!! Bird of prey silhouettes are not helpful!!!



Why too little is still being done

- ❖ The problem is often underestimated: "We don't have a problem with bird strikes"
- ❖ Lack of awareness and knowledge
- ❖ Aesthetic issues / acceptance
- ❖ Complex decision-making - especially in larger companies
- ❖ Costs

This way, acceptance can be increased:

- ❖ Using markings as a design element
- ❖ Informing the public and workers about the reason for the markings

Links on the topic of bird strike

EN: Bird-Friendly Building with Glass and Light, Swiss Ornithological Institute Sempach:

<https://vogelglas.vogelwarte.ch/assets/files/broschueren/Bird-friendly%20Building%20engl.pdf>

EN: Why birds hit Glass, American Bird Conservancy:

<https://abcbirds.org/glass-collisions/why-birds-hit-glass/>

EN: Bird-Safe Window Options from FLAP Canada

<https://flap.org/stop-birds-from-hitting-windows/>

EN: Experimental investigations of the efficacy of markings on glass panes under natural light conditions in Flight Tunnel II, University of natural resources and life science, Vienna:

https://meteo.boku.ac.at/report/BOKU-Met_Report_10_online.pdf

CH: Vogelfreundliches Bauen mit Glas und Licht, Vogelwarte Schweiz :

https://vogelglas.vogelwarte.ch/assets/files/broschueren/voegel_glas_licht_2012.pdf

AT: Vogelanprall an Glasflächen, Wiener Umwelt Anwaltschaft:

<https://wua-wien.at/naturschutz-und-stadtoekologie/vogelanprall-an-glasflaechen>

CZ: Ptáci a skla, Česká společnost ornitologická:

<https://www.birdlife.cz/co-delame/vyzkum-a-ochrana-ptaku/ochrana-druhu/konflikty-ptak-clovek/ptaci-a-skla/>

PL: Koliduje ptaków, fundacja szklane pułapki:

https://szklanepulapki.pl/wp-content/uploads/2021/05/Koliduje-ptak%C3%B3w-z-transparentnymi-powierzchniami_WEB.pdf

GR: Θανάτωση πουλιών από πρόσκρουση σε γυάλινα κτήρια, τιάμια και δαφανεείς κατασκευές. Μέθοδοι πρόληψης:

<https://koutsomili.wordpress.com/2021/01/14/%CF%83%CF%85%CE%BD%CE%AD%CE%BD%CF%84%CE%B5%CF%85%CE%BE%CE%B7-%CF%84%CE%BF%CF%85-%CE%B4%CE%B7%CE%BC%CE%AE%CF%84%CF%81%CE%B7-%CE%BC%CF%80%CE%BF%CF%8D%CF%83%CE%BC%CF%80%CE%BF%CF%85%CF%81%CE%B1-%CE%B3/>

ESP: Información sobre colisión de aves en España:

<https://seo.org/cristales-trampa-mortal-aves/>

http://www.ornitologia.org/ca/queoferim/divulgacio/publicacions/documents_tecnics.html

Products:

Make you own Acopian BirdSavers:

<https://www.birdsavers.com/make-your-own/>

Tested markings from Wiener Umwelthanwaltschaft:

<https://wua-wien.at/images/stories/publikationen/wua-vogelanprall-muster.pdf>

CollidEscape:

<https://www.collidescape.org/online-store>

Pilkington Glas:

<https://www.pilkington.com/de-de/de/produkte/produktkategorien/spezialglaeser/pilkington-avisafe>

Isolierglas:

<https://www.be-glass.de/a/Crashglass%20nach%20Ma%C3%9F>

Schallschutzwände mit waagerechten Linien: Evonik Industries für Lärm- und Windschutz Plexiglas:

<https://www.plexiglas.de/en/products/plexiglas/plexiglas-soundstop>

Glas Trösch:

<https://www.glastroesch.com/de/de/produkte/vogelschutz>

Glas Eckelt:

http://www.eckelt.at/de/downloads/produkte/sicherheit/4bird/prospekt_4bird.pdf

<https://glassolutions.at/de-at/produkte/4BIRD>

SEFAR Architectural solutions (Glasses with fabrics):

<https://www.sefar.com/en/609/Product-Finder/Architecture/SEFAR-Architecture-fabric-glass/SEFAR-Architecture-fabric-glass.htm?Folder=7200858>

SEEN Elements:

<https://en.seen-group.com/products/seen-elements/birdprotection/>

Implementation video:

<https://www.dropbox.com/s/o8fvtt3dxepcczy/seen%20Folie%20schnell%20-%20SD%20480p.mov?dl=0>

Eastman

<https://www.saflex.com/saflex-flysafe/pages/en/>

Stickers & Tapes

Vogelwarte Shop:

<https://www.vogelwarte.ch/de/shop/diverse-artikel/vogelschutz-folien-eckig>

<https://www.vogelwarte.ch/de/shop/diverse-artikel/vogelschutz-folien-rund>

<https://www.vogelwarte.ch/de/shop/diverse-artikel/klebeband-oracal-50-m>

Adler Glastech Austria:

<https://adler-glastech.at/produkt/vogelschutzfolie-vogel-anprallschutz/>

OPALFILM® Birdsaf:

<https://www.haverkamp.de/en/sun-protection-film-technology/architecture/window-films/birdsafe-protection-against-bird-impacts/product/opalfilm-birdsafe>

Bird Portals

Several countries/ regions of Europe: <https://www.ornitho.cat/>

This site is a bird portal which is in use in several countries/ regions of Europe for recording bird sightings. Besides that, the portal enables the recording of birds found dead and its cause and this information is directly forwarded to the rangers for their analysis and the possible implementation of corrective measures (i.e. complaints in dangerous buildings).

Greece: <https://www.paratiro.gr/>

It is a citizen science initiative by ANIMA that enables people to record dead or injured wild animals. Observation like these are vital to get a more complete picture of the situation! Most people are eager to provide information on the case, such as taking pictures and inspecting nearby windows for feathers and other marks.

Czech Republic: <https://www.birdlife.cz/co-delame/vyzkum-a-ochrana-ptaku/vyzkum-ptaku/avif/>

The FAUNISTIC DATABASE OF THE CSO, abbreviated as avif, is the basic information source about birds of the Czech Republic. At the same time, the main and most important part of the database portal is birds.cz. Avif provides an environment for recording, storing and using data from specialized projects such as stork nest tracking, research on bunting singing, mapping of nests, as well as for a new atlas of nest distribution or a new long-term LSD monitoring program.

Videos from the online event "Bird strike on buildings: what can companies do?" in May 2022:

- **Why birds fly into windows and what (really) helps!**, Dr. Wolfgang Fiedler, Max Planck Institute for Behavioural Biology: <https://youtu.be/uvKOrmDNZY4>
- **"We don't have a problem with bird strike!" Really? Monitoring bird strike on buildings**, Klemens Steiof, Berlin Senate Administration: <https://youtu.be/l4DvBWzrFjl>
- **Legal Protection Against Glass Strikes – Requirements So The Three Little Birds Don't Worry No More**, Benedikt-Huggins, Institute for German and European Administrative Law, University of Heidelberg: <https://www.youtube.com/watch?v=E0V9FruisHM>
- **Bird-window collisions in Greece: Numbers and facts**, Maria Ganoti & Alexandros Vezyrakis, ANIMA: <https://youtu.be/0dxSTps-1kc>
- **Bird-window collisions in Spain: a case study and some examples**, Raül Aymí & Oscar Gordo, Institut Català d'Ornithologia: <https://youtu.be/muFsBP1Lsf8>
- **The safe flight project**, Andrea Bracko, Zagreb Zoo: <https://youtu.be/iXJ28zYqxo0>
- **Solutions for existing and new glasses**, Rouven Seidler, SEEN GROUP: <https://youtu.be/4yAwkLhwFBs>

Literature

Länderarbeitsgemeinschaft der Vogelschutzwarten (2021). Vermeidung von Vogelverlusten an Glasscheiben, Beschluss 21/01

Bayerisches Landesamt für Umwelt (2021). Untersuchung zum Vogelschlag an Glas in München August bis Oktober 2020

Steiof, K., R. Altenkamp & K. Baganz (2017): Vogelschlag an Glasflächen: Schlagopfermonitoring im Land Berlin und Empfehlungen für künftige Erfassungen. Berichte zum Vogelschutz 53/54: 69–95.

Schweizerische Vogelwarte Sempach (2012). Vogelfreundliches Bauen mit Glas und Licht

Länderarbeitsgemeinschaft der Vogelschutzwarten (2017). Der mögliche Umfang von Vogelschlag an Glasflächen in Deutschland – eine Hochrechnung. Berichte zum Vogelschutz 53/54: 63–67

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Coal Tit Page 2: Vogelwart Schweiz <https://vogelglas.vogelwarte.ch/de/infothek/plakate>

Great Spotted Woodpecker Page 2: Vogelwart Schweitzer <https://vogelglas.vogelwarte.ch/de/infothek/plakate>

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LIFE BooGI-BOP

In the project LIFE BooGI-BOP seven European partners from Austria, Germany, Slovakia and Spain have teamed up to promote biodiversity-oriented design of business premises in Europe. Among other things, we support you by providing initial guidance that gives you a first impression of the design potential, the search for a suitable service provider for planning and implementation and credible communication.

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We look forward to supporting you!

Further information: www.biodiversity-premises.eu

"Bird strike on buildings: what can companies do?" is an event of the Life LIFE BooGI-BOP.

More Information:

<https://www.biodiversity-premises.eu>



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