## Bird-Safe Buildings Timeline - Technology, Science, and Policy

| | |
|---|---|
| 1916 | US Migratory Bird Treaty Act adpted for treaty with Canada |
| 1950s | Most windows are openable with insect screens, which prevent collisions |
| 1960s | Picture windows become widely available, installed without screens |
| 1973 | US Endangered Species Act adopted |
| 1980s | Glass buildings, balconies, railings, skywalks, greenhouses, gazebos become common |
| 1980s | Biologists begin studying bird-glass collisions |
| 1989 | Klem finds window height and size do not affect chance of bird-glass collisions |
| 1990s | Scientists recommend screens or netting and reduced glass area |
| 2000s | Glass treatments tested - patterns 2" apart vertically or 4" apart horizontally |
| 2005 | Birds and Building forum held in Chicago |
| 2007 | Toronto adopts Bird-Friendly Development Guidelines (updated in 2013 and 2017) |
| 2008 | Hager finds area of windows predict bird strikes more than height or nearby habitat |
| 2011 | American Bird Conservancy (ABC) publishes Bird-Friendly Building Design booklet |
| 2011 | ABC publishes numeric Material Threat Factors for glass treatments |
| 2011 | US Green Buildling Council adds LEED Pilot Credit 55: Bird Collision Deterrence |
| 2011 | Highland Park, IL adopts requirements for City buildings including patterns on windows |
| 2011 | Calgary adopts Bird-Friendly Urban Design Guideliens |
| 2011 | San Francisco adopts Ordinance requiring more treatment in first 6 stories near open spaces |
| 2012 | Portland adopts voluntary measures |
| 2013 | State of Minnesota adopts design guidelines for state funded buildings using Threat Factors |
| 2013 | Oakland adopts measures for Building Permit Review for first 6 stories near open spaces |
| 2014 | Sunnyvale adopts voluntary Design Guidelines toavoid reflective glass first 60 feet |
| 2014 | US Fish and Wildlife Service study (Loss et al) estimates annual mortality at 365-999 million/year - all sizes of buildings |
| 2015 | American Bird Conservancy updates Bird-Friendly Building Design booklet - all parts of buildings, all sizes of windows, all locations, hummingbirds see UV-treated glass |
| 2015 | San Jose adopts voluntary measures with no location limit |
| 2015 | Federal Bird-Safe Buildings Bill (HR 2280) introduced, 10% clear glass below 40', 40% above |
| 2015 | HIghland Park, IL adopts requirements for all buildings |
| 2016 | Richmond adopts ordinance, treat first 6 stories near open spaces, residential panes 24 sq ft |
| 2016 | California Academy of Sciences study (Kahle et al) - mitigation is required all year here, low rise buildngs need to be treated, and most victims in the study were hummingbirds |
| 2018 | Alameda adopts ordinance, no locaiton limit, treat residential panes 12 sq feet |
| 2019 | Berkeley committee approves ordinance, no location limit, residential panes 8 sq ft |
| 2019 | Science publishes estimate that since 1970 bird populations in US and Canada have declined by 29%, almost 4 billion birds, hundreds of species, shorebirds by a third. |

Note: Much of this information is from Seewagen, C. L. and Christine Sheppard, 2017. *Bird collisions with windows: An annotated bibliography* . American Bird Conservancy, Washington, DC. 41 pages.

***Attachment 2***