From:

To: Manston Airport

Subject: Deadline 9: Additional Information: Noise interferes with bird life

Date: 22 June 2019 10:49:25

Attachments: Noise affects birds more than expected.rtf

FROM: Chris Lowe Interested party: 20014275

Dear ExA.

I have just discovered the attached on the link between man made noise and birds.

Unfortunately in the limited time available, I have not been able to obtain direct access to the original article, so also include summaries from two sources, to expand the details.

This is a peer reviewed report, and It is saying that birds are more affected by noise than previously realised, and this interferes with how they interact.

As the Guardian says:

"Birds already face an array of human-made dangers, from pesticides and intensive farming to shooting and poisoning. But noise had often been overlooked, the paper in <u>Biology</u> Letters found.

A spokesperson for the RSPB said: "Everyone is becoming increasingly concerned that nature is in crisis in the UK, with one in 10 of our wildlife species at threat of extinction. Many of our birds' populations are already facing a serious crisis as a result of habitat loss, climate change and other human activities.

"This report is a good reminder that the way we live and our lifestyle has an impact on our natural world, and that we need to protect our natural world if we want to let nature sing."

For Manston creating a lot more noise will obviously disrupt wildlife over a wide area.

In view of the parlous state of wildlife which is facing other challenges to survive, this means that Manston must not go ahead, because birds are just a part of the local biodiversity which would be even more affected by the diminished bird life.

I hope this is helpful to you.

Best wishes.

Chris Lowe

Signal complexity communicates aggressive intent during contests, but the process is disrupted by noise

Original report, with restricted access, on:

Contestants use displays to signal their aggressive intent and settle disputes before they escalate. For birds, this is often in the form of song, which can vary in structural complexity. The role of song complexity in signalling aggressive intent has not been fully established, and its efficacy could be influenced by background noise levels. Using playback experiments, we found that in European robins, *Erithacus rubecula*, song complexity signalled sender aggression and affected receiver response. However, increased noise impacted the ability of contestants to adjust response based on opponent song complexity. These findings provide new evidence regarding the use of acoustic signal complexity for assessing opponent aggression and that noise can influence contest behaviour by interrupting this process, which could impose fitness consequences.

Summary from the Guardian

www.theguardian.com/environment/2019/jun/20/twitter-storm-noise-pollution-creates-havoc-for-birds-study-shows

Human activities could be affecting reproduction and even normal social behaviour

Fiona Harvey Environment correspondent

A Belfast university study found human noise pollution directly influenced robins' ability to communicate with each other.

Birds are even more disrupted by their noisy neighbours than had been thought previously, <u>researchers</u> have found. And human activities could be preventing birds from reproducing and even developing normal social behaviour and keeping the peace.

A study by Queen's University Belfast found that when European robins were subjected to <u>human produced</u> <u>noises</u> their behaviour changed. Background noise appeared to mask the communication of crucial information between birds.

While aggressive communication is common and birds respond to it, interference through noise can lead to the birds mistaking the signals.

Gareth Arnott, senior lecturer and researcher from the Institute for Global Food Security at Queen's University Belfast, said: "We found that bird song structure can communicate aggressive intent, enabling birds to assess their opponent. But human-made noise can disrupt this crucial information passed between them, by masking the complexity of their songs used for acquiring resources, such as territory and space for nesting."

<u>Birds</u> can end up in situations all too familiar to humans. "The birds receive incomplete information on their opponent's intent and do not appropriately adjust their response," explained Arnott. "Where song is disguised by background noise, in some cases the male ends up fighting more vigorously than he should, but at other times gives in too easily."

This is the first time it has been shown that aggressive communication is being disrupted by noise.

Arnott said the purpose of birdsong was twofold – to attract mates and defend territory.

Birds already face an array of human-made dangers, from pesticides and intensive farming to shooting and poisoning. But noise had often been overlooked, the paper in <u>Biology</u> Letters found.

A spokesperson for the RSPB said: "Everyone is becoming increasingly concerned that nature is in crisis in the UK, with one in 10 of our wildlife species at threat of extinction. Many of our birds' populations are already facing a serious crisis as a result of habitat loss, climate change and other human activities.

"This report is a good reminder that the way we live and our lifestyle has an impact on our natural world, and that we need to protect our natural world if we want to let nature sing."

The research does not have clear implications for <u>human health</u>, although excessive noise can damage <u>children</u>'s <u>ability to learn</u> and causes stress among adults.

For birds, the extra burden of noise pollution adds to extraordinary decline in species, including among once common birds, in recent decades due to such activities as agricultural practice and pesticide use.

In the experiment the team used playbacks of robin song to stimulate responses from birds who were territory holders. Simple or complex songs were used in either the presence or absence of noise.

The researchers found that song complexity was used as a signal of aggressive intent; birds demonstrated higher aggressive intent towards complex rather than simple song. This process was disrupted by the presence of added noise.

Arnott said: "The study is evidence that human-made noise pollution impacts animal habitats and directly influences their ability to communicate properly, which may have implications for survival and population numbers for birds."

Summary from 'the print' on 21 June, 2019:

theprint.in/science/human-noises-create-havoc-for-birds-even-prevent-them-from-reproducing-says-new-study/ 252550/

A new study has found that human noises can prevent birds from reproducing or even developing normal social behaviour.

Conducted by researchers of Queen's University Belfast, UK, the study was published in the journal *Biology Letters*, 19 June, 2019. Researchers said the study has also established for the first time a link between human-induced noise pollution and decline of bird population.

To understand the effect of human noises in birds, researchers studied bird songs and their responses. Birds use their songs for various reasons. The most well-known reason is, of course, for attracting mates. But, the ability to compose sounds with structural complexity allows birds to use songs to give other signals as well such as for claiming new territories for nesting or breeding purposes.

Birds also communicate aggression through songs, and often settle disputes by effectively arguing melodiously with each other.

One way to understand bird songs is by recording a song, then playing it back in a controlled environment and then observing behaviour of other birds.

The study

The researchers had first recorded songs of European robins. Then they played the songs back to the birds in a controlled environment and checked their reactions.

They first discovered that complexities of the songs signalled a level of aggressive intent of the birds and affected the response of other birds. The more complex a song was, the more aggressive the reaction was from other birds.

When the researchers introduced human noises in the environment, they noticed that the birds' responses were dampened and they did not react with the kind of urgency required despite increasingly complex and aggressive songs being played in the environment. At times, the birds even misjudged the complexities and reacted more aggressively than was required.

"The birds receive incomplete information on their opponents' intent and do not appropriately adjust their response," said Gareth Arnott, principal investigator of the study, in a statement.

"Where song is disguised by background noise, in some cases the male ends up fighting more vigorously than he should, but at other times gives in too easily," he added.

'Human-made noise impacts both animals and birds'

The new study raises concerns over birds' ability to develop social behaviour, compete for resources, breed and live safely, and most importantly, reproduce.

Birds, like most other life on Earth, have already been <u>affected by human activities</u> such as habitat loss to farming, climate change and residential and commercial development, expansion of cities, among others.

This is also the first time that a link between noise produced by humans and decline of bird population has been established by a study.

"The study shows that human-made noise pollution impacts animal habitats and directly influences their ability to communicate properly, which may have implications for their survival, and on population of birds," said Arnott.