

Silent·Cities : monitoring large scale changes in urban ecoacoustics during the covid lockdown using deep learning and passive acoustic monitoring

Equal contributions (alphabetical order) :

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- Amandine GASC, *IRD UMR IMBE, France*
- Nicolas PAJUSCO, *Institut d'Acoustique-Graduate School, France*

+ Consortium Silent Cities (261 personnes)

Paper accepted for publication in Nature Scientific Data (in press)

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Le confinement, révélateur de l'attrait de la nature en ville

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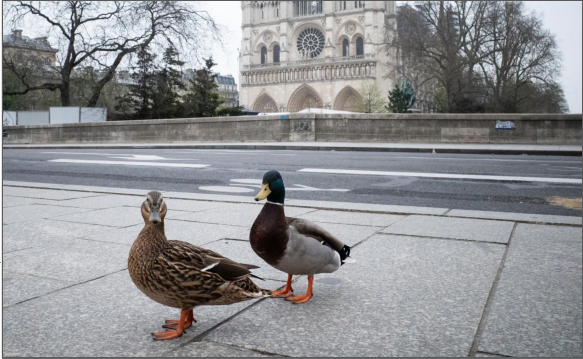
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Environment Climate crisis **Wildlife** Energy Pollution

Wild cities
Wildlife

"The bliss of a quiet period': lockdown is a unique chance to study the nature of cities



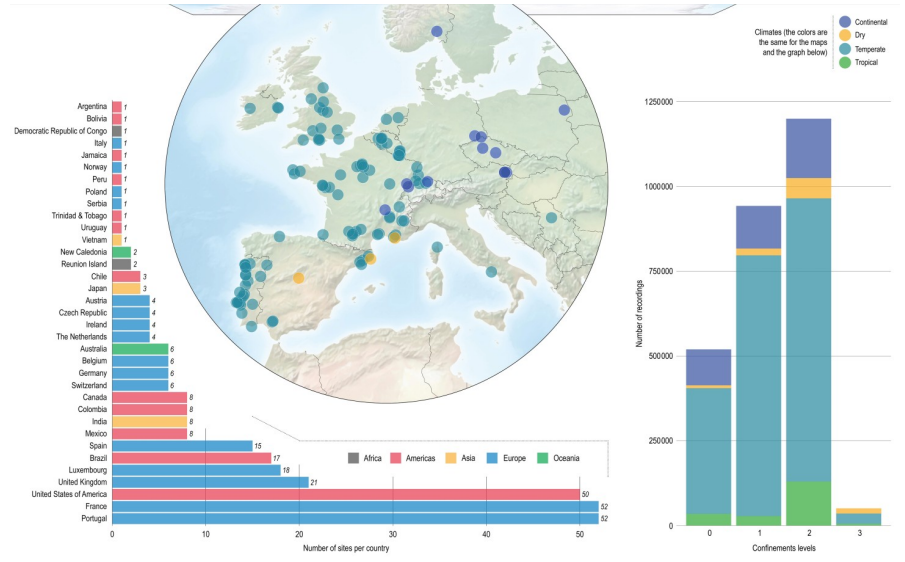
The New York Times

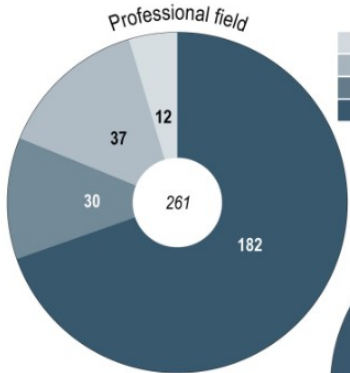
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The Birds Are Not on Lockdown, and More People Are Watching Them

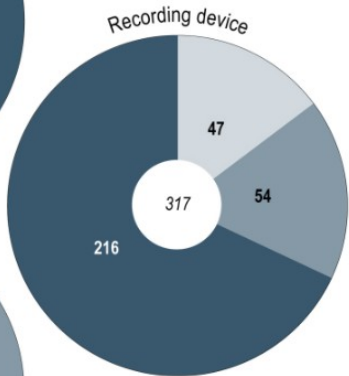
Bird-watching has surged in popularity during the pandemic. It's easy to start, and you can do it anywhere — even from inside, and even in urban spaces.

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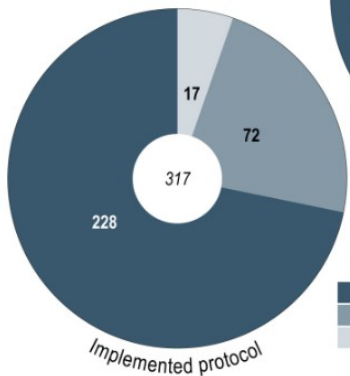




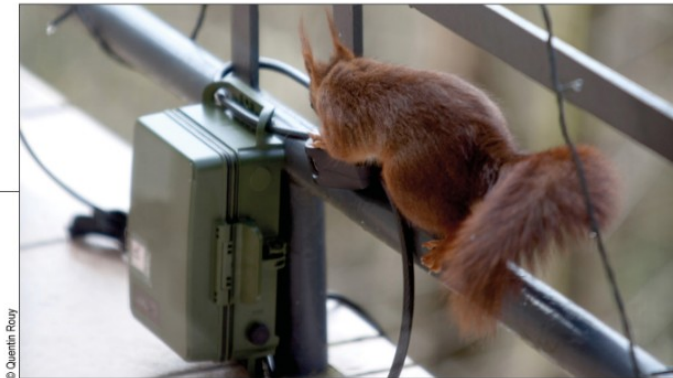
- Artists
- Conservationist practitioners
- Other
- Academics

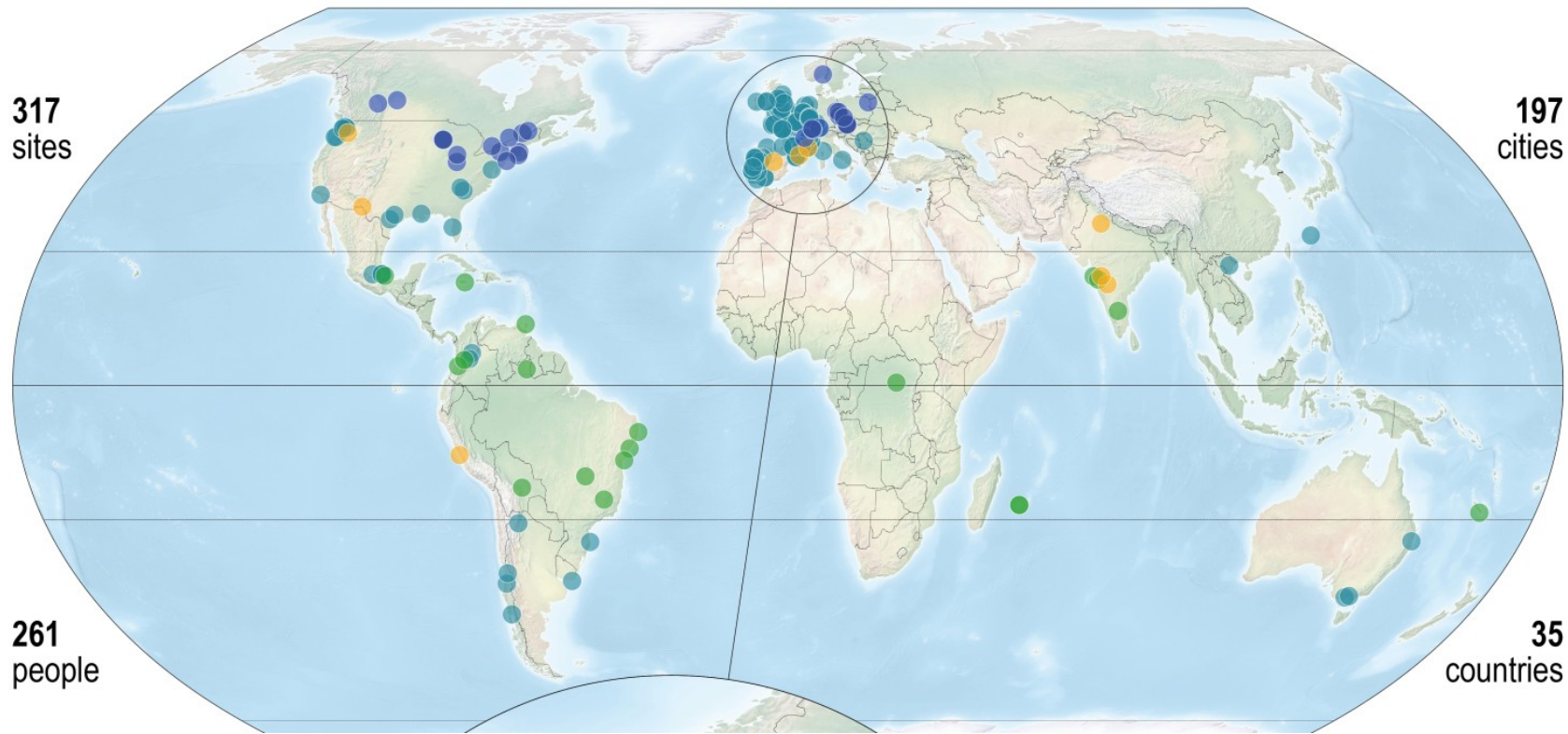


- Open Acoustic Devices AudioMoth
- Other
- Wildlife Acoustics SM4

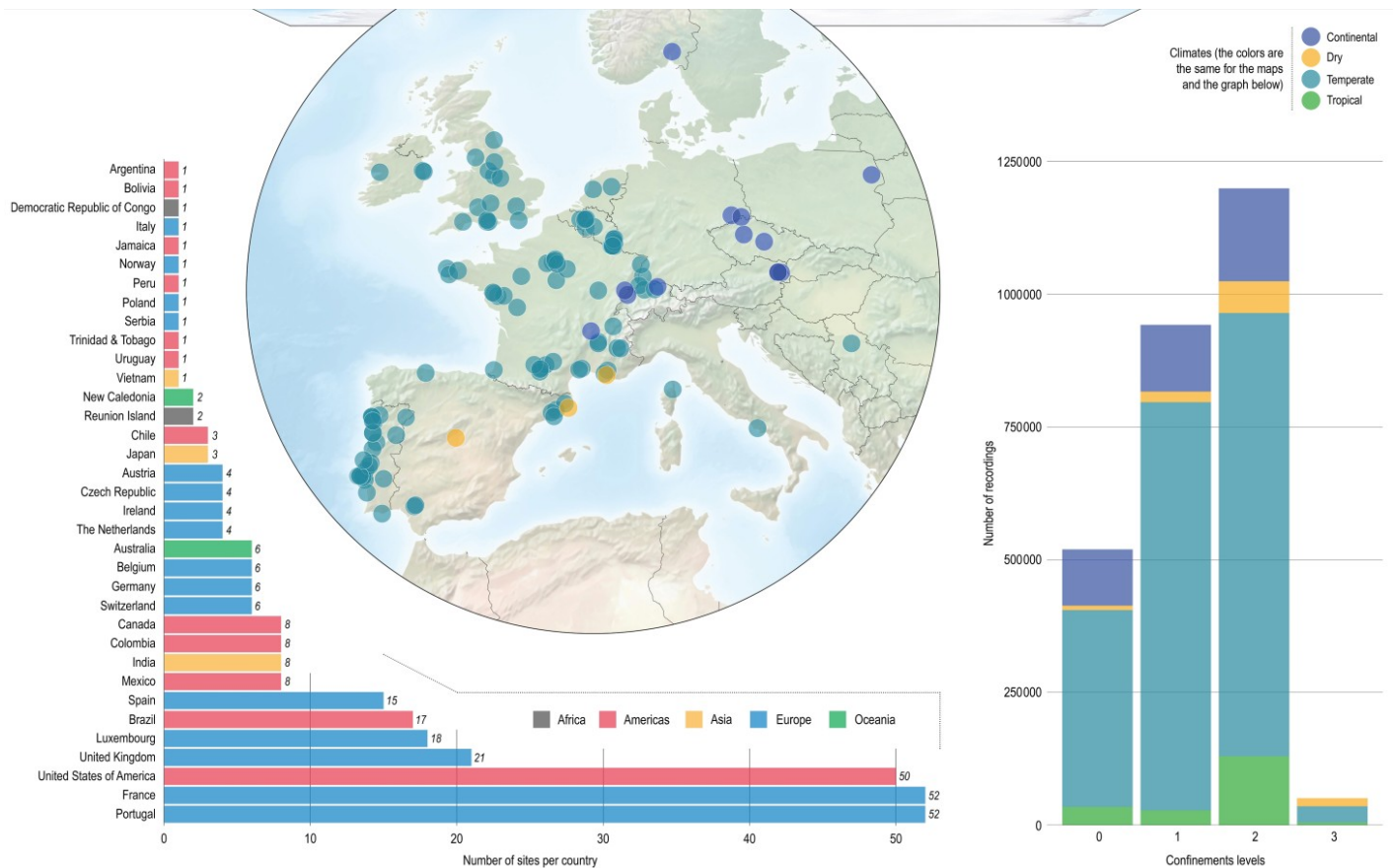


- Expert
- Light
- Opportunistic





Oxford
 COVID-19
 Government
 Response
 Tracker
 (Hale et al. 2020)



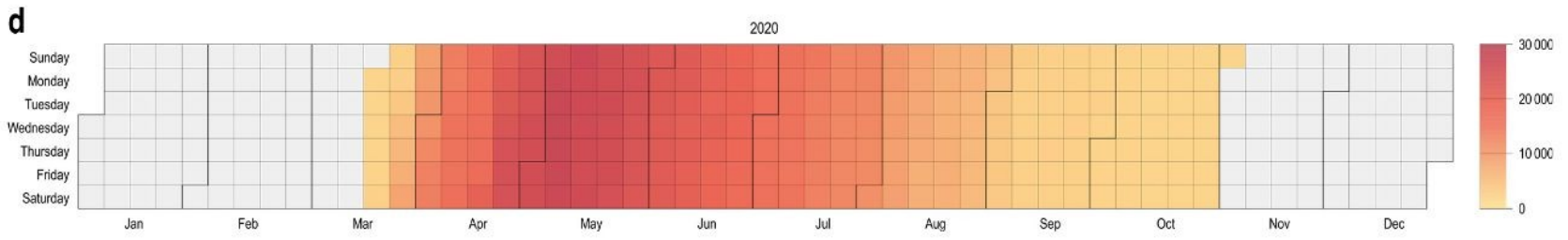
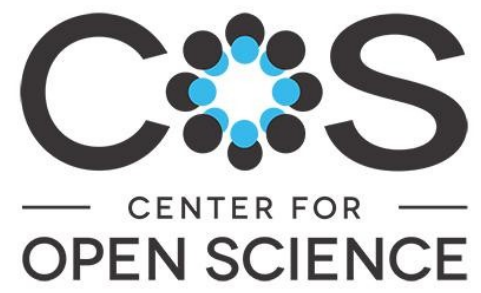
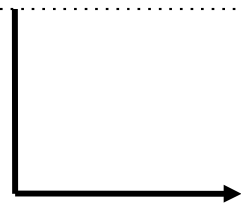


Figure 1 | Panel d. Temporal distribution of global sampling effort, in number of recordings.

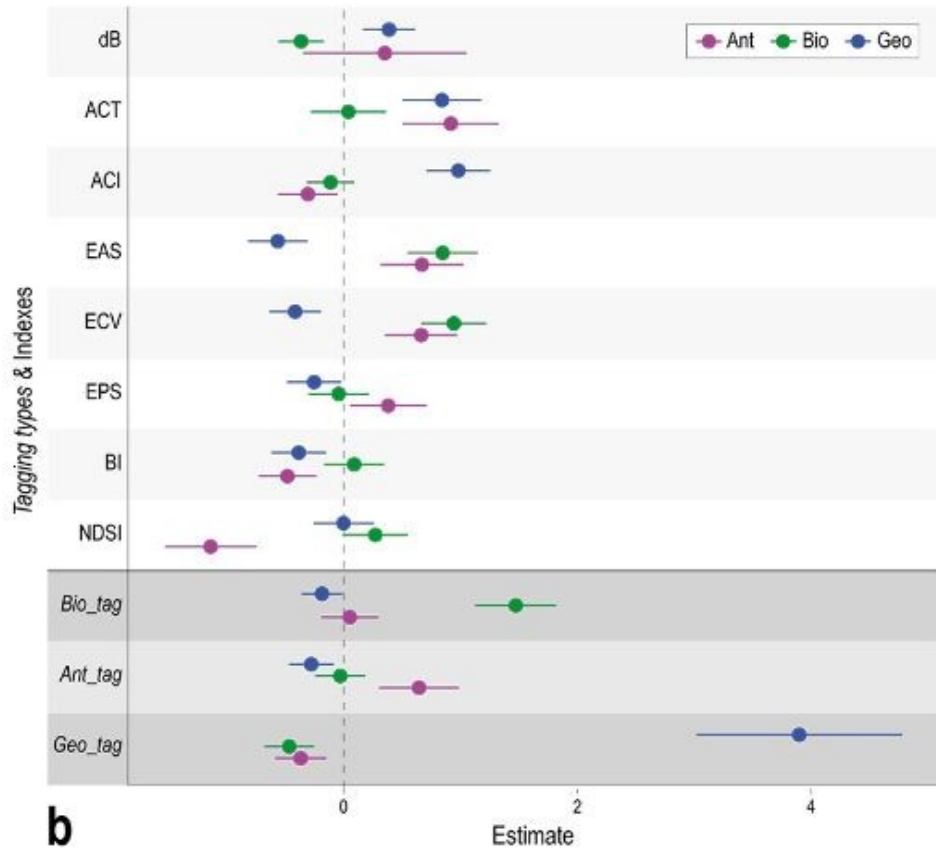
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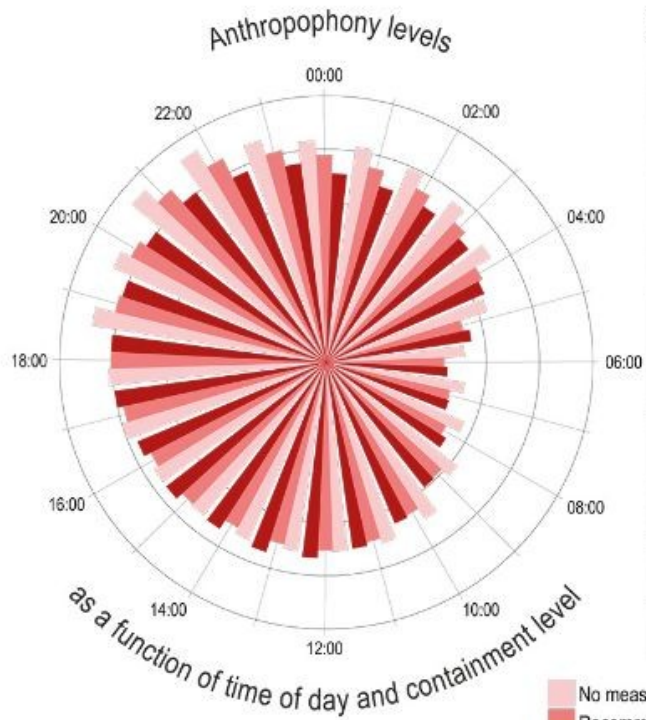
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Variable	Definition	Possible value and range
Geophony_TempLevel	range of occupancy	0%/1-25%/25-50%/50*75%/75-100%
Wind	strength	0/1/2/3
Rain	strength	0/1/2
Wave	strength	0/1/2
Thunder	strength	0/1
Biophony_TempLevel	range of occupancy	0%/1-25%/25-50%/50*75%/75-100%
Bird	range of song types number	0/1-3/4-6/7-8/9-11/>11
Amphibian	range of song types number	0/1-3/4-6/7-8/9-11/>11
Insect	range of song types number	0/1-3/4-6/7-8/9-11/>11
Mammal	range of song types number	0/1-3/4-6/7-8/9-11/>11
Reptile	range of song types number	0/1-3/4-6/7-8/9-11/>11

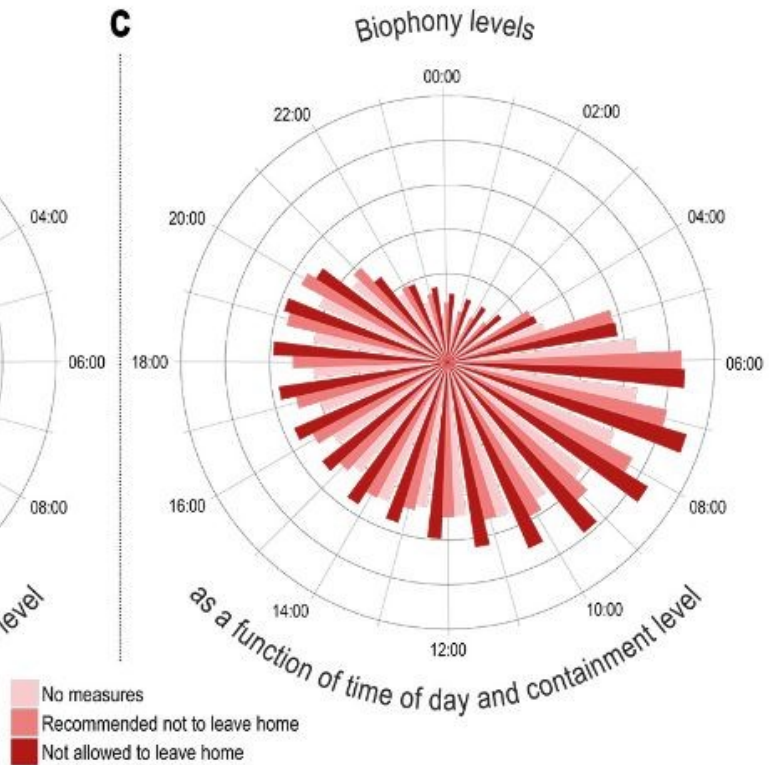
Final tag name	Corresponding labels in AudioSet Ontology	Category
Wind Rain River Wave Thunder	Wind Rain Stream/Waterfall Ocean Thunderstorm	Geophony
Bird Amphibian Insect Mammal Reptile	Bird vocalization, bird call, bird song/Pigeon, dove/Crow/Owl/Gull, seagull Frog Insect Rodents, rats, mice/Canidae, dogs, wolves Snake	Biophony



2. Automatic sound



C



- No measures
- Recommended not to leave home
- Not allowed to leave home

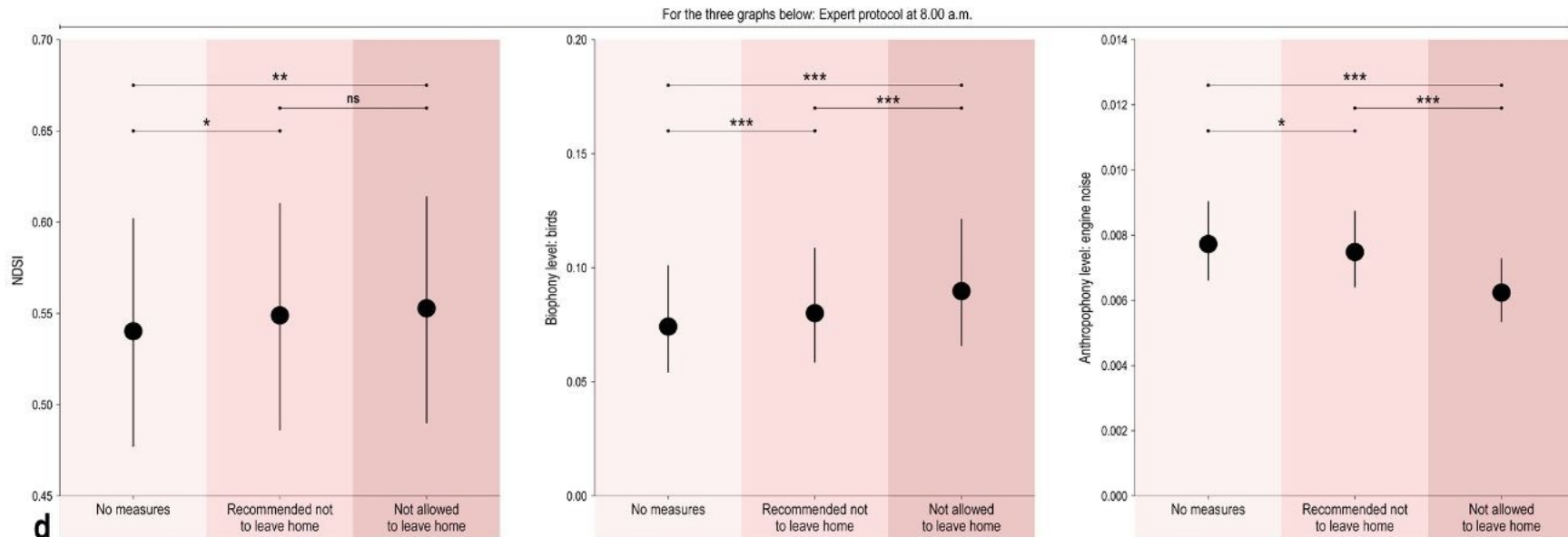
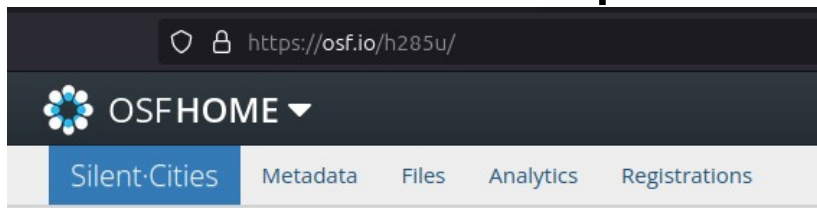


Figure 2 | Panel b. Association between the measured acoustic indices and tagging types and the presence of geophonical (Geo), biophonical (Bio) and anthropophonical (Ant) events detected manually by the contributors. Model estimates and associated 95% confidence intervals are represented with points and bars, respectively. Positive and negative estimates with confidence intervals not overlapping zero indicate positive and negative associations, respectively. **Panel c.** Radial barplots depicting the mean anthropophony and biophony level values per site, combining all protocols, recorded hourly throughout each period of COVID-19 containment levels. **Panel d.** Model predictions and associated 95% confidence intervals for NDSI, biophony (birds) and anthropophony (engine noise) levels at 8:00 a.m. during the COVID-19 confinement measures, following the expert protocol only. *** $p < 0.001$, ** $p < 0.010$, * $p < 0.050$, ns: $p > 0.050$.

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<https://osf.io/h285u>

online access <https://osf.io/h285u>



Silent-Cities

Contributors: Samuel Challéat, Nicolas Farrugia, Amandine Gasc, Jeremy Froidevaux, Krzysztof Deoniziak, Guillaume Marchais, Jean-Christophe Gattus, Richard Beason, Pavel Linhart, Alice Eldridge, Sandra Mueller, Oscar H. Marín Gomez, albane BURET

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README.pdf	4 Downloads	54.0 kB	2023-12-13 05:06 PM	

Summary

A detailed description of the files of the [Silent Cities dataset on OSF](#).

The top level folder is accessible [here](#).

Please also refer to the [paper](#) (under review) and make sure to cite it :

Challéat S., Farrugia N., Froidevaux J. S. P., Gasc A., Pajusco N. et al., "The Silent Cities dataset: acoustic measurements from soundscapes collected worldwide during the COVID-19 pandemic", under review

Folders

The Dataset is structured as follows :

- Files
 - metadata
 - ConfinementLevels.csv
 - Glossary.csv
 - Site.csv
 - SunMoon.zip
 - preprocessed
 - AcousticMeasurements.zip
 - AcousticMeasurements_nospeech.zip
 - AveragedCompleteTable.csv
 - AveragedCompleteTable_nospeech.csv
 - dB.zip
 - ManualIdentification.csv
 - processed
 - 001
 - audio
 - partID001_01.tar.gz
 - partID001_02.tar.gz
 - partID001_03.tar.gz
 - partID001_04.tar.gz
 - ...
 - 002
 - 003

Thanks

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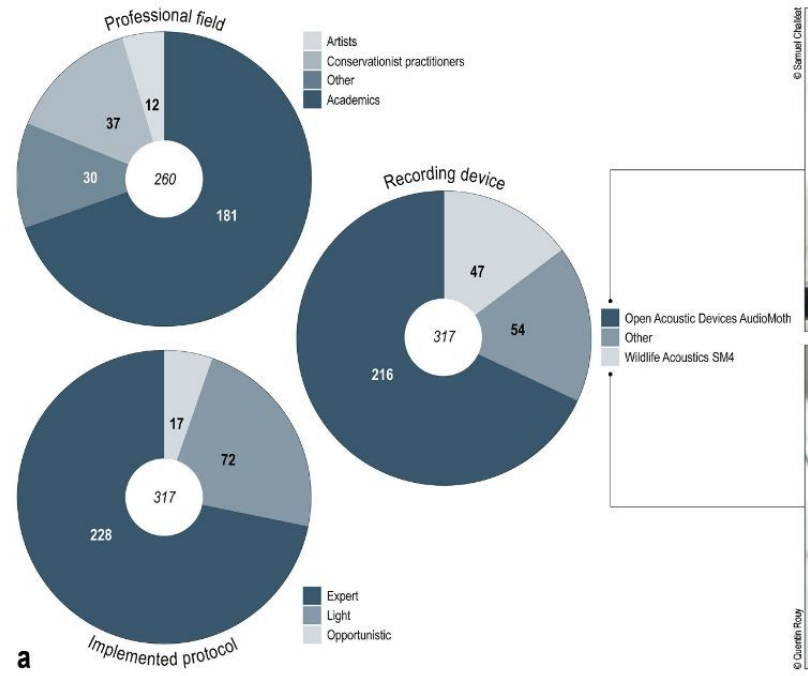
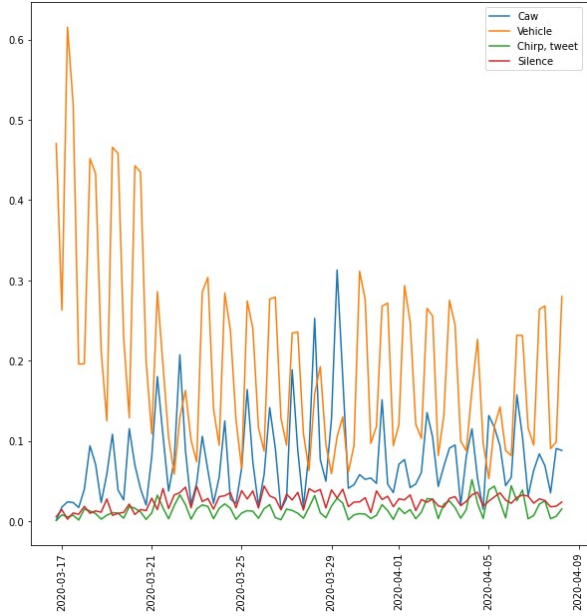
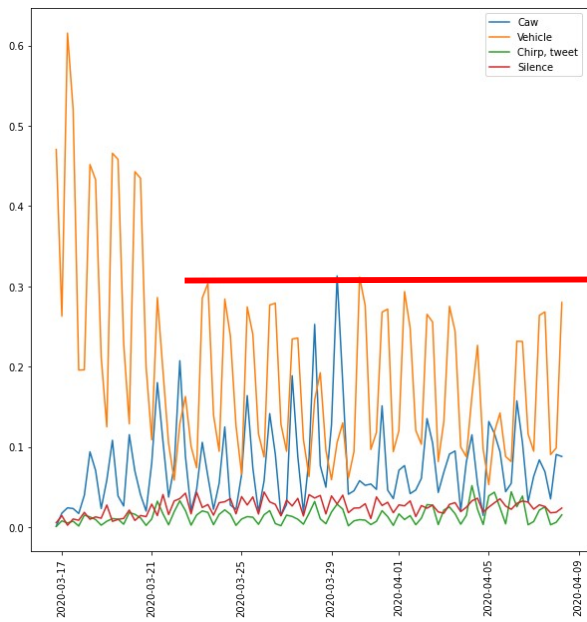


Figure 2 | Panel a. Top left: Professional fields of the 260 participants. Middle: Distribution of type of devices for the 317 recording sites. Bottom left: Distribution of type of devices for the 317 recording sites. Top: Acoustic Devices AudioMoth (top) and Wildlife Acoustics SM4 (bottom).

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Silent Cities Project : Data Analysis



Site informations :

Site: 1
Country: France
City : Toulouse
Recorder : Open Acoustic Devices AudioMoth
Stat : 0.888
Information : NA

Wave file informations : file name 5EA3BA70_50.mp3, date : 2020-04-25 04:20:50, Geophony : 0.0013202728, Biophony 0.7496709, Anthropophony 0.03291528

