

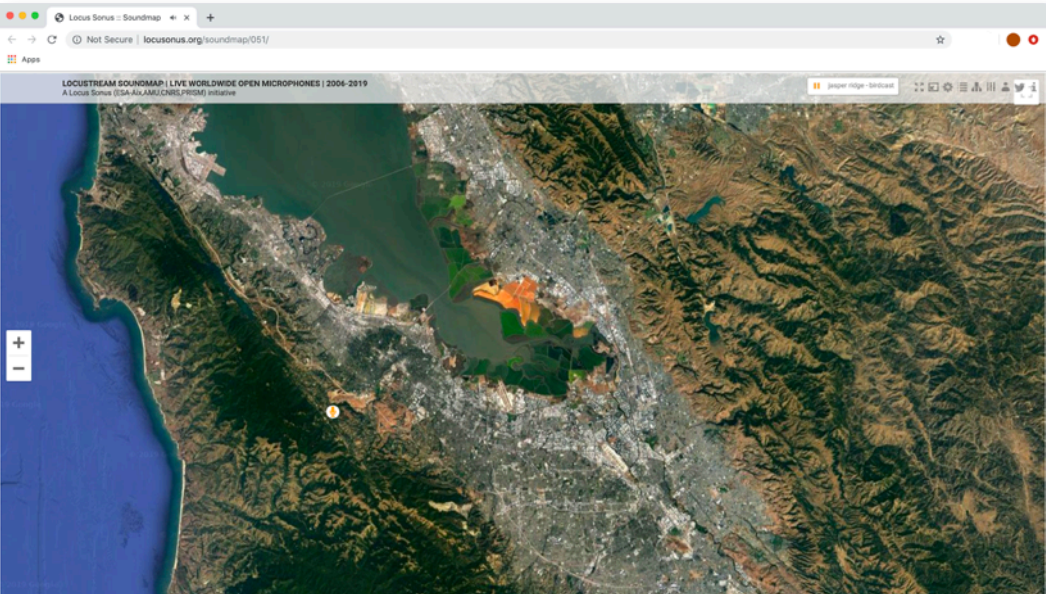


Daybreak on 7 May 2017. Soundcamp at Gyorae Forest Park, Jeju Biosphere Reserve, South Korea by Weather Report (Jiyeon Kim, Gangil Yi). Photo: Jiyeon Kim

About

Biosphere Open Microphones brings together projects working with live audio to relay environmental sounds. It aims to create an increasingly detailed and diverse account of planetary soundscapes, available in real-time via an online soundmap, as a public resource for artists, researchers and activists. The current pool of live streams spans from domestic interventions to formal research programs, across the arts and sciences. BIOM will preserve this diversity, working with local groups to set up and operate live streams, using a range of approaches from commercial broadcasting technologies to DIY streamboxes and mobile apps.

Each open microphone is also an opportunity for exploration and engagement with a particular point of listening, whether in a remote rural location or the inner city. The UNESCO Man and the Biosphere program has long provided a context for people to engage in innovative ways with their environments, and to share learning and experiences across sites. BIOM aims to use this framework to make compelling connections between places of acoustic and ecological significance, and establish long term data-sets for environmental monitoring and analysis.



Live stream from Jasper Ridge Biological Preserve, Stanford University, 15 / 09 / 2019
Icon on LOCUSTREAM soundmap (2006 - 2019) by Locus Sonus
locusonus.org/soundmap/

Biosphere Open Microphones

CAMP

Aulus-les-bains, 18-22 September 2019

A multi partner project to create a network of open microphones in the UNESCO Biosphere Reserves, relaying real-time sounds and establishing new long-term databases for public engagement and research. BIOM brings together a group of pioneering arts and science initiatives and builds on them to establish new live streams from places of exceptional ecological and acoustic interest.

It relies on approaches developed by Locus Sonus (Aix-Marseille, France), Biosphere Soundscapes (Brisbane, Australia), Cyberforest (Tokyo, Japan), Jasper Ridge Biological Preserve (Santa Cruz, California, United States) and SoundCamp (London, United Kingdom).

It provides a forum for existing work with live environmental sound and supports setting up new live streams from a variety of habitats, by developing and sharing technical information, advice, training and resources.

Live streaming is increasingly available for work in the fields of ecoacoustics, sound art and music, ‘citizen-art-science’ and environmental advocacy. It can be an alternative to remote field recording for ecological research. It can add value to dispersed projects, and contribute to an awareness of ecological connections, by allowing listeners to share sounds in real time and make ‘forays’ by ear into remote habitats.

Live streams can be recorded, as at Cyberforest, creating a long-term archive of seasonal and circadian variations, towards a real-time acoustic observatory.

Aims and Objectives

To establish a new network of live streams from UNESCO Biosphere reserves (BRs), available in real-time via an online soundmap as a public resource for artists, researchers and activists.

To use the UNESCO Man and the Biosphere programme as a frame to make real-time connections and share learning and experiences between sites.

To preserve the diversity of the current pool of live streams, which spans from domestic interventions to formal research programs, across the arts and sciences.

To work with local groups to set up and operate new streams, using a range of approaches from commercial broadcasting technologies to DIY streamboxes and mobile apps.

To support installing resilient open microphones in a variety of habitats in UNESCO BRs, with the sounds publicly available for remote listening in real-time (with streaming servers hosted by Locus Sonus).

To record the audio from the open microphones, creating long term public data-sets for the sites (with archive servers hosted by Cyberforest, University of Tokyo).

To be led by local groups in the setup and maintenance of the open microphones, making them a hub for learning and engagement in the BRs.

Working Group (in collaboration with BRs and partners by site)

Biosphere Soundscapes, Brisbane, AUS
Cyberforest, University of Tokyo, JP
Feral Arts, Brisbane, AUS
Jasper Ridge Biological Preserve, Stanford University, CA
Locus Sonus, CNRS, PRISM, Aix Marseille University, FR
Sound and Environment, University of Hull, UK
SoundCamp, London, UK

Affiliates, Supporters, Expert Associates

World Network of UNESCO Biosphere Reserves
UNESCO Man and the Biosphere Program (MAB)
Balance-Unbalance (conference, platform)
Sound + Environment with S+E Research Group (University of Hull)
Ecoacoustics 2018 Congress & WFAE 2018 Conference (Queensland University of Technology, Queensland Conservatorium, Griffiths University, Brisbane)
Streaming Museum (streamingmuseum.org/)

Hervé Glotin, SABIOD, CNRS, University of Toulon (data analysis)
René van der Wal, Centre for Environmental Sustainability, University of Aberdeen (environmental engagement)

Open Microphones

Cumbria Open Microphone Network (COMN)

South Walney Island, Cumbria, UK
Cumbria Wildlife Trust, Full Of Noises,
SoundCamp



Full Of Noises and Octopus Collective, a sound arts organisation based in Barrow-in-Furness, are collaborating on a live stream from a remote coastal location on South Walney Island as part of a program of public engagement with the site - an SSSI with a distinctive shingle ecology. A Raspberry Pi based streambox places the listener low down on the beach among nesting seabirds.

cumbriawildlifetrust.org.uk/reserves/south-walney
octopuscollective.org/
soundtent.org/south_walney/GULLSPIT.html
octopuscollective.org/events/full-of-noises-4-5-gull-spit-27-281017/
Listen live at locus.creacast.com:9001/south_walney.mp3

Jeju Biosphere Reserve

Jeju Island, South Korea
Weather Report



Weather Report, an arts collaborative based in Seoul, have operated temporary open microphones from Jeju island over 3 years, including a stream from Culture Space Yang, Georo Village and a soundcamp in Gyorae Forest Park in May 2017. Weather Report have developed work with music

Jeju BR goo.gl/oGBa9N
weatherreport.kr/
mixcloud.com/weather_report/stream/

Golden Gate Biosphere Reserve

Jasper Ridge Biological Preserve, CA, USA
Stanford University, Golden Gate Natural
Recreation Area, Bodega Marine Reserve



The BR is a highly diverse and culturally rich complex of urban, multi-use and wild environments with coastal forests, chaparral, scrub, prairies, rare serpentine grasslands, and islands. Birdcast, a live audio stream by Trevor Hebert, shares a changing soundscape of waterfowl, amphibians, songbirds, large mammals and overflying aircraft. Launched in 2013, Birdcast soon became popular with

A residency by Soundcamp including field studies, DIY audio workshops and a live stream installation in the market at Barrow, explored connections between the city and the island. Rebecca Chesney, Maja Bugge, Tim Shaw and Lee Patterson have been artists in residence. The image shows an oyster catcher on the Spit from a remote camera, by Sarah Dalrymple, CWT.

and live remote streaming of environmental sounds, enabling local and remote audiences to become more aware of acoustic and environmental changes over time. This links to research and advocacy around local development.

online communities, letting ornithologists and lay experts supplement conventional bird surveys, listen out of hours and hone ID skills, and providing contact with the site for older and less able birders. New streams, archiving and additional remote sensing equipment would reach new ecosystems above and below water, opening collaborations with other stakeholders.

soundtent.org/biom/places/jasper_ridge.html
Golden Gate BR unesco.org/mabdb/br/brdir/directory/biores.asp?mode=all&code=USA+42
jrpb.stanford.edu/about/facilities/live-audio-stream
bml.ucdavis.edu/bmr/about.html
Listen at locus.creacast.com:9001/jasper_ridge_birdcast.mp3

Timetable

Launch: Sound + Environment, Hull, 29/6 –2/7
2017 soundenvironment.net/
Presentation + new streams: Braunton Burrows, N Devon BR, Balance-Unbalance, Plymouth, 21/8 - 23/8
2017 balance-unbalance2017.org/
Presentation at Perspectives on Listening, Brisbane, 7-9 Dec. 2017
200 live streams for the annual Reveil broadcast, 2014-2019
Presentation and technical workshops at Ecoacoustics conference, Brisbane 2018.
Workshop at CAMP, French Pyrenees, Sep. 2019
Convergence with the MAB Strategy 2015-25 and Lima Action Plan 2016-25 unesdoc.unesco.org/images/0024/002474/247418E.pdf

Shiga Highland Biosphere Reserve

Shiga Nature Education Park, Nagano, Japan
Cyberforest (University of Tokyo), Shinshu
University Institute of Nature Education



A long term stream is operated by Cyberforest in collaboration with the Shinshu University Institute of Nature Education. The project comprises real time stereo sound transmission, data logging and public engagement, with phenological research, citizen science activities and machine based audio analysis by the SABIOD big data program at CNRS, University of Toulon. In an annual remote bird census, ornithologists listen in pairs to the live streams around dawn, communicating by IRC chat to log the species and estimate the numbers of birds they hear.

soundtent.org/biom/places/shiga.html
Shiga Highland BR unesco.org/mabdb/br/brdir/directory/biores.asp?code=JPN+03&mode=all
Project page cf4ee.nenv.k.u-tokyo.ac.jp/en/pad/otanomo.php
Listen live at mp3s.nc.u-tokyo.ac.jp/OTANOMO_CyberForest.mp3

Monarch Butterfly Biosphere Reserve

Cerro Pelón, State of Mexico
University of Hull, Universidad Autónoma de México, Forestry Service, Arborists’ training program, Morelia



A collaboration between Rob Mackay (University of Hull, UK), Pablo Jaramillo (University. Autónoma de México, David Blink (College of the Sisquiyous, USA), Soundcamp (London, UK), the Forestry Service and a local arborists’ training project. In early 2017 the team installed a live solar powered stream in the Monarch Butterfly Biosphere Reserve in the mountains above Morelia, the butterflies’ main Winter roosting place. The stream has attracted wide interest among the network of Monarch researchers

soundtent.org/biom/places/cerro_pelon.html
en.wikipedia.org/wiki/Monarch_Butterfly_Biosphere_Reserve
texasbutterflyranch.com/2018/02/07/symphony-of-wings-sound-of-millions-of-monarch-butterflies-available-via-live-stream/

Noosa Biosphere Reserve

Noosa, Queensland, Australia
Biosphere Soundscapes



The Noosa BR comprises 60 distinct ecosystems, with more than 300 bird species and 1300 plant species, with many endemics. An ocean corridor supports marine fauna including some 18,000 humpback whales on annual migration. Permanent streams are under development as part of an extended research and public engagement project by Biosphere Soundscapes, exploring the Biosphere Reserve via a range of recording, field studies and live streaming activities, and through public and spe-

The census moves from one site to the next each day. The Shiga stream is part of a program streaming live data from the University of Tokyo forests since the early days of the public internet.

The area around Kobushi is currently being proposed as a new Biosphere Reserve. This would include live streaming points at Tetto and Yatake. Sounds from these sites can be heard on the Locus Sonus soundmap. Logs over many years can be accessed at the Cyberforest project page.

and advocates, as a tool for public engagement, live music composition, and expanding appreciation of this habitat’s value and fragility. The project is currently being extended to link key points in the butterflies’ migration routes from Mexico as far North as Canada, drawing attention to the need for collaborations across disciplines and borders to conserve a charismatic indicator species. Photo by Rob Mackay.

cialist research programs with attention to both terrestrial and aquatic ecologies. Soundcamps in 2017 and 2018 included a live stream of an underwater dawn chorus with snapping shrimps and grunting catfish. Related work by Biosphere Soundscapes includes live streaming for the River Listening Project and a new long term stream from the rainforest canopy at Mary Cairncross Scenic Reserve in Queensland.

Noosa BR noosabiosphere.org.au/biospheresoundscapes.org
Listen at soundcloud.com/leah_barclay/dawn-in-the-noosa-biosphere-reserve-excerpt-from-reveil2017-live-stream
riverlistening.com/
locus.creacast.com:9001/rainforest_canopy_mary_cairncross_scenic_reserve.mp3

Next steps and how to be involved

BIOM welcomes proposals for new sites and related activities. We can provide advice and technical assistance.
Raspberry Pi based streamboxes are easy to build using streaming software from Soundcamp or Locus Sonus. They can also be purchased assembled or as kits.
You can start by setting up an account at Locus Sonus: locusonus.org/soundmap/dev/admin/login/ locusonus.org/soundmap/dev/admin/login/ > ‘open a new microphone and join the Locustream SoundMap project’.
A summary of methods, equipment and resources is available here: soundtent.org/streaming_recipes.html
A detailed discussion of streaming and the Locus Sonus open microphone platform is available at: locusonus.org/wiki/index.php?page=Locustream.en
Please contact one of the partners to discuss planning and setting up a stream.