



ENA Notebooks

What are ENA Notebooks?

ENA Notebooks are a new rapid visualisation and analysis platform created to allow quick calls to metadata services supported by ENA. This platform was developed to facilitate scientific collaborations through an open-source, virtual lab designed to support biodiversity data workflows, discovery, and visualisations.

ENA Notebooks serve as a dynamic tool for helping researchers and other users to discover biodiversity data, and for providing a better understanding on the interoperability and reusability of data.

The browser-based application leverages Jupyter Notebooks to create a versatile platform for developing interactive dashboards and reports. ENA Notebooks are a useful tool for exploring sequence data and other related biodiversity data available from different resources.



How can ENA Notebooks help you explore biodiversity data?

ENA Notebooks allow users to quickly visualise metadata available in the ENA as well as in other biodiversity infrastructures including taxonomic resources (such as [TreatmentBank](#), Plazi TreatmentBank taxonomic treatment collection), data aggregators (such as the Global Biodiversity Information Facility, [GBIF](#)) and literature services (such as [OpenBiodiv](#), Open Biodiversity Knowledge Management System).

By performing API calls to the different services, the notebooks can render a summary of the biodiversity data available while displaying some relevant metadata (such as geographic distribution). These can also include links that redirect the user to the source infrastructure allowing researchers to fully explore the available data.

Who is using it?

ENA Notebooks are being used by the biodiversity community to explore the availability of source information in public records and to explore accessible data per species/taxonomic group.

Two Notebooks have been developed for the BiCIKL Open call projects that describe data available at ENA and other biodiversity infrastructures for targeted groups of species, namely *Cicadidae* species from Brazil and species from the genus *Enchodelus*.



What notebooks are available?

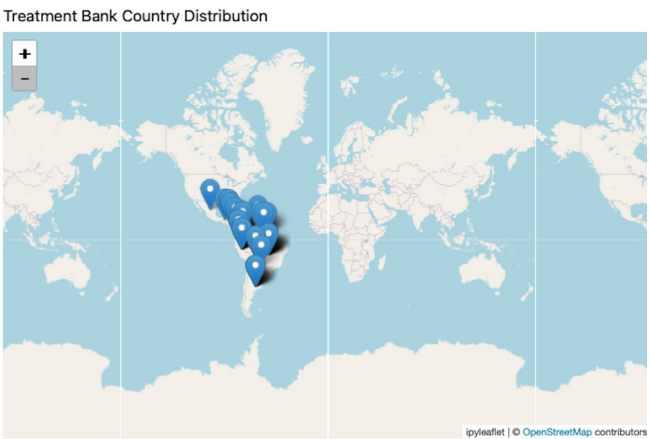
1 Species Visualisation Notebook

The species visualisation notebooks, including the *Cicadidae* species notebook and the *Enchodelus* species notebook, display a summary of the sequence data at ENA, and data available from other Biodiversity resources (TreatmentBank, OpenBiodiv and GBIF). The notebooks contain graphical representations of some

relevant metadata (such as geographical locations) and allow the user to download the list of ENA records. In the species visualisation notebook the users input a list of species for targeted searches.

2 ENA Metadata Availability Analysis Notebook

This notebook allows users to visualise samples and sequence metadata availability through time. A list of relevant source attributes is available for selection providing a better understanding of the evolution of meta-data availability through time.



Species occurrences from various Datastores

	Scientific Name	ENA Records	Treatment UUID	Treatment Citations	Material Citations	GBIF Occurrences	Open Bio-Div Occurrences
0	Acanthoventris charrua	0	2	0	9	9	12
1	Acanthoventris claudiae	0	1	0	11	11	8
2	Acanthoventris densus	0	1	0	16	0	11
3	Acanthoventris drewseni	0	3	1	2	318	7
4	Acanthoventris faustopsaltrius	0	1	0	1	1	7
5	Acanthoventris iara	0	2	1	13	13	9
6	Acanthoventris igneus	1	2	1	7	7	10
7	Acanthoventris olivarius	1	2	1	5	5	7
8	Acanthoventris phoenix	0	1	0	2	2	13
9	Acanthoventris rubemi	0	1	0	2	2	8
10	Acanthoventris viridinotatus	0	1	0	1	1	8
11	Ariasa albigula	0	1	1	1	6	7
12	Ariasa arechavaletae	0	1	1	5	6	5
13	Ariasa bilaqueata	0	6	2	18	26	17
14	Ariasa egregia	0	2	2	2	2	8

Screenshots of the current features of the Species Visualisation Notebook.

