Historical Animal Observation Records by Bavarian Forestry Offices (1845): Description of the Data Sets

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Introduction

In 1845, under the scientific direction of Andreas Wagner, the Bavarian government recorded the occurrence of 44 selected vertebrate species across the entire country. To this end, Wagner had a survey questionnaire sent to all 119 forestry offices in the state. The foresters' responses were now systematically recorded and analyzed for the first time. This data set represents the result of this survey. Among other things, it contains 5,464 geo-coded animal observation data.

The data is the result of an interdisciplinary collaboration between scientists from the Chair of Computational Humanities at the University of Passau, the Directorate General of the Bavarian State Archives Munich, the German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig, the Center for Biodiversity Informatics and Collection Data Integration at the Botanic Garden Berlin, and the NFDI4Biodiversity consortium.

This data contains:
- 5,464 records of vertebrate observation data in structured format;
- Including geographical information of the observations (on office level);
- Species names in historical writing and modern scientific names;
- All textual evidence integrated in the records set and separately as an XML-file;
- Links to the digitized original files;
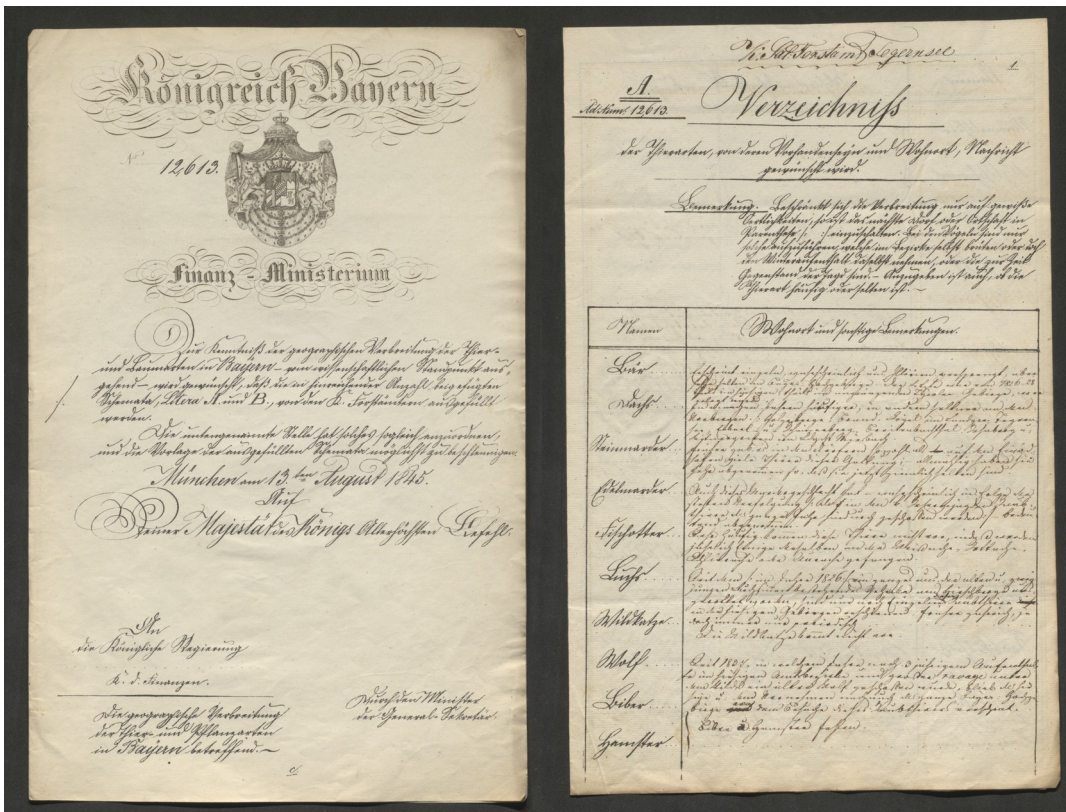- Additional information about the forestry offices and officers.

Figure 1. Left: Royal order from August 13th, 1845: "Zur Kenntniß der geographischen Verbreitung der Thier- und Baumarten in Bayern — vom wissenschaftlichen Standpunkt aus gesehen — wird gewünscht, daß die in hinreichender Anzahl beigefügten Schemata, Litera A. und B., von den K. Forstämtern ausgefüllt werden."[1] (BayHStA, Zool. Staatssammlung, 208, p. 3). Right: Completed first page of the survey form from Salinenforstamt Tegernsee (BayHStA Zool. Staatssammlung, 217, p. 5).

Reference: Rehbein, Malte; Engel, Thore; Matheisen, Giada; Hörl, Lina; Haas, Bettina; Lambsdorff, Felix; Perschl, Tobias (2024): Mobilisation of historical animal observation data - the Bavarian survey of 1845. Poster. All Hands Conference NFDI4Biodiversity (https://zenodo.org/records/11183498).

Further publications currently under review.

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[1] For the knowledge of the geographical distribution of animal and tree species in Bavaria - from a scientific point of view - it is desired that a sufficient number of the enclosed diagrams, Litera A. and B., be completed by the Royal Forestry Offices.

Main Data Tables

Summary

The data set contains 5,464 records of vertebrate observation data from a survey conducted in the Kingdom of Bavaria in 1845. It also contains (partly historical) names of reported species and their modern names. Furthermore, Bavarian administrative districts are listed with their English names. Forestry offices are given with their geographic locations.

Files:
- AOD_Observation_Record_Data.csv
- AOD_Species_Names.csv
- AOD_Districts.csv
- AOD_Offices.csv
- AOD_forestry_offices_staff.csv

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Record Data

Overview

File: AOD_Observation_Record_Data.csv

This contains the major data in the set, the occurrence status per species and forestry office. The data is structured in csv-format following the terminology provided by the *Access to Biological Collection Data* (ABCD) Schema. One row in the data table represents one of the 5,464 entries taken from the questionnaire. One entry represents the status of occurrence (and additional information) of one species per forestry office, e.g., about the bear in Deggendorf, Lower Bavaria. Hence, for each of the 119 offices, at least 44 data rows are created.
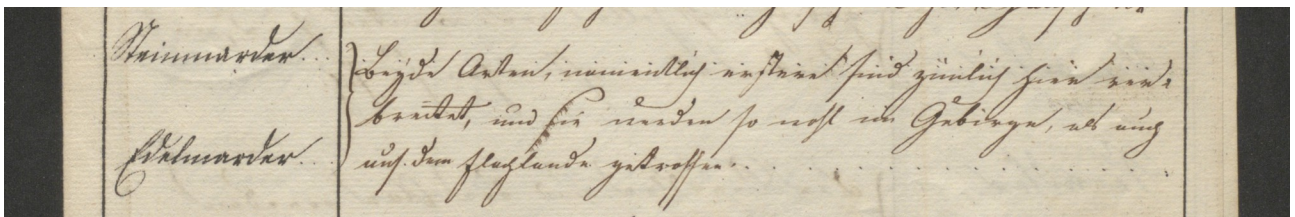

Figure 2. Sample record from the Marquartstein office, Salforste. The record shows a joint report for the two martens; cf. records E_01148 and E_01149.

In cases where one entry contains information about past occurrences and/or occurrences of other species, a new entry (row) is created. Example: E_02475_1

Data Structure

AREA	FIELD (column)	DESCRIPTION
metaData	ID	Unique ID for this record, in the form E_nnnnn. The entries are numbered consecutively, starting with "E_00001". In cases where one entry contains information about

		past occurrences and/or occurrences of other species, a new entry is created that follows the original one with an ID in the form "E_nnnnn_mm", where mm is consecutively used within this record (not globally), starting from "01", and "nnnnn" refers to the original entry, e.g., E_00066_1
	baseURLviewer	URL that links directly to the first page of the digital copy of the original file (per administrative level), provided by the Bavarian State Archive
record identifier for ABCD	sourceInstitution	Institution that preserves the original files. Always Bayerisches Hauptstaatsarchiv (Bavarian State Archive)
	sourceOfRecord	Archival signature for the original sources. Collection (always: Zoologische Staatssammlung) and number by administrative district as follows: 209 = Upper Bavaria; 210 = Lower Bavaria; 211 = Upper Franconia; 212 = Middle Franconia; 213 = Lower Franconia; 214 = Upper Palatinate; 215 = Swabia; 216 = Palatinate; 217 = Salforste
	recordIdentifier	Unique identifier (uuid) for the digital file, provided by the Bavarian State Archive, one per file (administrative district)
	recordBasis	Always "Human Observation"
Multimedia object 1	FileURL	URL that links directly to the page documenting the observation in question, provided by the Bavarian State Archive
	FileFormat	Format of the digital image of the observation record, always jpeg
	Licence	Licence for using this data, always CC-BY
	DFGviewerURL	Same as FileURL, within the DFGviewer environment
	Page	Page number of the record in question within the digital file
officeData	OfficeName	Name of the reporting forestry office. Corresponds to table "AOD_offices.csv"
	District	Name of the administrative district, the office belongs to table "AOD_Districts.csv"
	OfficeID	ID of the forestry office which this entry refers to. Corresponds to table "AOD_offices.csv"
animalData	SpeciesID	ID of the species which this entry refers to. Corresponds to table "AOD_species.csv"
	SpeciesName	Name of the species which this entry refers to as provided in the questionnaire
	ExtraNamesFromSource	Additional name of a species given in a responses, especially when an additional species is reported
observationData	BinOccurrence	Binary classification of this record as fol-

			lows:
		1	1 = We could draw from the texts that the reporting office was sure or at least provided good reason that a specimen of this species had recently (in 1845) been seen within the boundaries of its district. We do not distinguish the type of the animal's visit (e.g. resident or migratory bird); nor have statements about quantity and abundance (yet) been datafied (e.g. rare occurrence, close to extinction, regular). Where such information is available, future research may extract it from the texts given within the datasets. Example: E_00054
		0	0 = There is no or no justifiable evidence for an observation. Example: E_00045 Also the few cases in which an occurrence is reported to be situated outside a natural environment (in game parks or pheasantries) Example: E_01208
	Date		We generally assume all reports refer to the year 1845 or only a few years earlier if not otherwise stated. Where otherwise stated, the given date has been coded and used as time of observation. In case of the latter, a new data entry has been created.
	Text		Text as given in the original record. Text is transcribed character by character as is in the original source including abbreviations and potential misspelling. Unsure transcriptions are marked as '#...#'. A significant amount of entries repeat the previous line by using 'ditto' words or signs or they aggregate entries by using curly brackets. Occurrence data has been drawn from the line referred to by the signs or brackets in these cases.

Species Names

Overview

File: AOD_Species_Names.csv

This files contains a mapping of the (historical) species names as given in the survey form or by the responders to their modern scientific names. The data is structured in csv-format.

Data Structure

FIELD (column)	DESCRIPTION
ID	Unique ID for each species in the form "SP_nnnn", consecutively used from "SP_0001" to "SP_0044" for the species asked for in the questionnaire. For additional species reported, identifiers beginning with "SP_1000" are used.
German species name in questionnaire	Species name in German as given in the survey form.
Latin species name in questionnaire	Species name in Latin as given in the survey form (only two cases).
Additional German species name from responses	In cases where the foresters report additional species, the German name (if any) they use is given here.
Additional Latin species name from responses	In cases where the foresters report additional species, the Latin name they use (if any) is given here. Either a German or Latin name is stated for all additional species.
Common English species name	English common name of the species (only for the 44 species listed in the questionnaire).
Attributed scientific name	Modern scientific name for species as investigated. Might contain an entry like "repeated SP_1026" if the same species was reported by different names.
Taxon_ID	Unique species identifier from German Red List Centre (https://www.rote-liste-zentrum.de) / Federal Agency for Nature Conservation (BfN) checklist
URL_Taxon_ID	Link to full taxon data entry from checklist (JSON-format)

Districts

Overview

File: AOD_Districts.csv

This files contains the names of the eight administrative districts (Kreise) of Kingdom of Bavaria plus the Salforste as of 1845. The data is structured in csv-format.
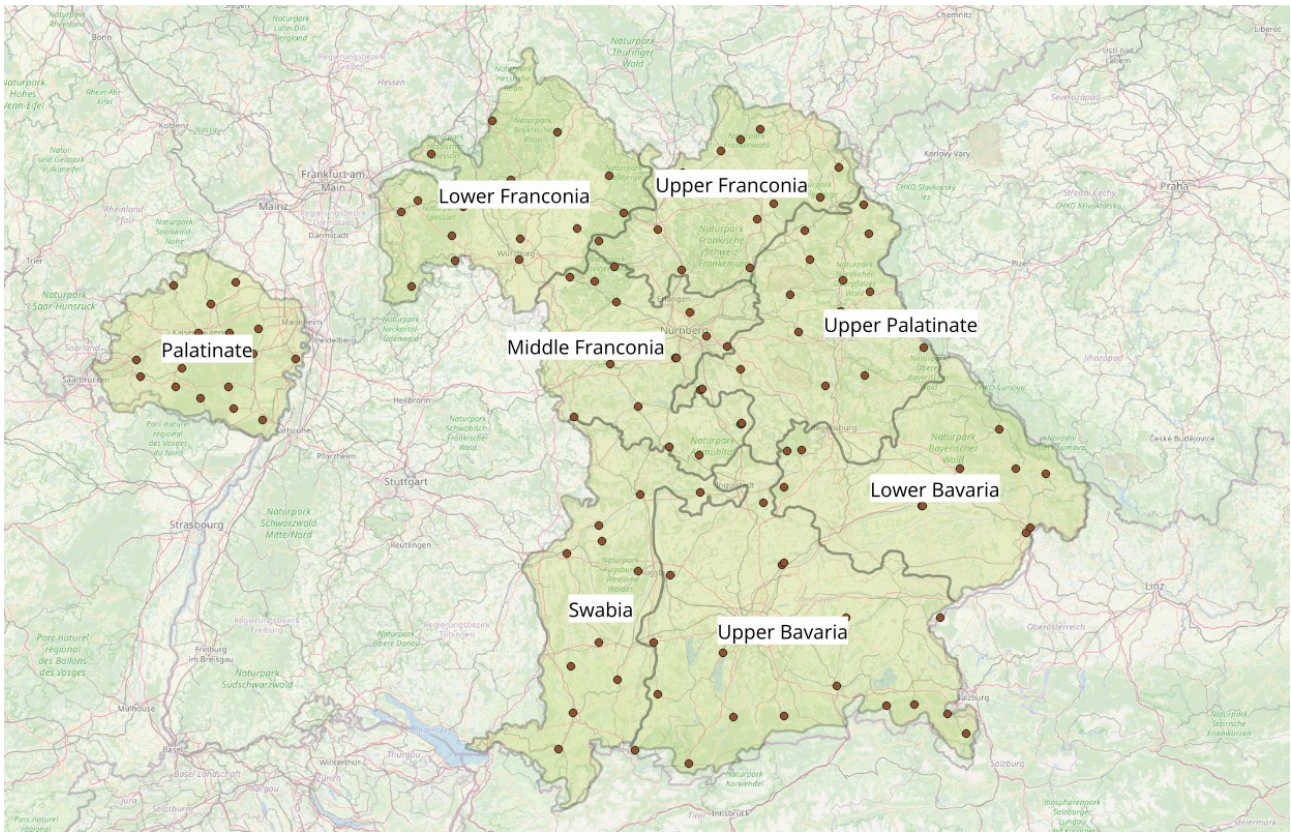

Figure 3. Map shows the eight administrative districts of Bavaria, 1845, and the seats of the 119 forestry offices.

Data Structure

FIELD (column)	DESCRIPTION
ID	Unique ID for each district in the form "D_nn", consecutively used from "D_01" to "D_09" without any particular order.
Name	Official name of the district in German.
NameEnglish	Common English name of the district.
sourceOfRecord	Archival signature for the original files belonging to this district. Collection (always: Zoologische Staatssammlung) and number by administrative district as follows: 209 = Upper Bavaria; 210 = Lower Bavaria; 211 = Upper Franconia; 212 = Middle Franconia; 213 = Lower Franconia; 214 = Upper Palatinate; 215 = Swabia; 216 = Palatinate; 217 = Salforste. Used also in main records table.

uuid	Unique identifier (uuid) for the digital file, provided by the Bavarian State Archive, one per file (administrative district). Used also in main records table.
fileURL	URL that links directly to the first page of the digitized file belonging to this district (usually the file cover), provided by the Bavarian State Archive

Offices

Overview

File: AOD_Offices.csv

This file contains information about the 119 forestry offices, especially geographic coordinates of their seats. The data is structured in csv-format

Data Structure

FIELD (column)	DESCRIPTION
ID	Unique ID for this office in the form "OF_nnnn", consecutively used from "OF_0001" to "OF_0122". Note that numbers 5, 9, and 109 are left out to allow later additions for reports omitted here.
District	Common German name of the district, this office belongs to. Can be ignored. Used table Districts instead.
Office	Name of this office.
Longitude	Geographical location of the office seat.
Latitude	
FileFirstPage	Number of page of the file in which the report by this office begins. Can be ignored as more precise information is given in the main records table.

Offices and Foresters

Overview

File: AOD_forestry_offices_staff.csv

This csv-file documents all forestry offices (German: Forstamt) of the Kingdom of Bavaria, its subordinated districts (German: Reviere), and the names of the people responsible.

Source of information: Hof- und Staatshandbuch des Königreichs Bayern (State Directory of the Kingdom of Bavaria). 1845. Hrsg. vom Königlich Bayerischen Statistischen Landesamt.
Digital copy of the book provided by the Bayerische Staatsbibliothek, available under
https://www.digitale-sammlungen.de/de/view/bsb10374590

Data Structure

FIELD (column)	DESCRIPTION
Governmental District	In 1845, the Kingdom of Bavaria was structured into 8 administrative districts. With the exception of a few offices that had cross-border responsibility, each office is assigned to an administrative district. The offices of the so-called Salforste are another exception.
Governmental District (English)	Common English name of the governmental district.
Forestry Office (Forstamt)	Official name of the forestry office. The 119 forestry offices are the major unit of investigation in the survey. The names correspond to the data table and the transcriptions.
Forest District (Revier)	Official name of a subordinate district. The table is arranged in a way that the head office (see line above) is listed first, then all subordinated offices.
Forester (of Forest District)	Name of the forester responsible for the subordinate district.
Head of Office (Forstmeister)	Name of the senior forester responsible for the office as a whole. This is assumed to be the person who filled in the questionnaire. In some cases, the documents contain a signature which always correspond to the name listed in the State Directory.

Transcriptions

Transcriptions (files AOD_transcriptions.xml and AOD_transcriptions.xsd) are documented separately. See file AOD_transcriptions_doc.pdf.