Objects, preservation, participation, and education in a digital world

Museum für Naturkunde Berlin

Gregor Hagedorn & Johannes Vogel, 2015-11-12

Museum für Naturkunde Berlin

Leibniz-Institute for Evolution- and Biodiversity Science

- 1810 founded (with Humboldt Univ.)
- 1889 current building
- 2009 Member of Leibniz Society
- ca. 30 million Objects in the collection
- Among „top 10“ Berlin museums!
- 290 staff, 95 scientists

museum für
naturkunde
berlin

ORGANIGRAM

MUSEUM FÜR NATURKUNDE BERLIN

Digital World and Information Science

Head: Dr. Gregor Hagedorn
Deputy Head: Dr. Christoph Häuser
Sekretariat: Ulrike Grunow

- Information and Communication Technology
- Digitisation Research
- Library, Information Services and Publication Management
- Information Networks and Digital Communication

Public Engagement with Science

Head: Dr. Katrin Vohland
Deputy Heads: Astrid Faber / Uwe Moldrzyk
Secretariat: Monika Neumann

- Exhibitions and Knowledge Transfer
- Education
- Science in Society
- Perspectives on Nature – PAN

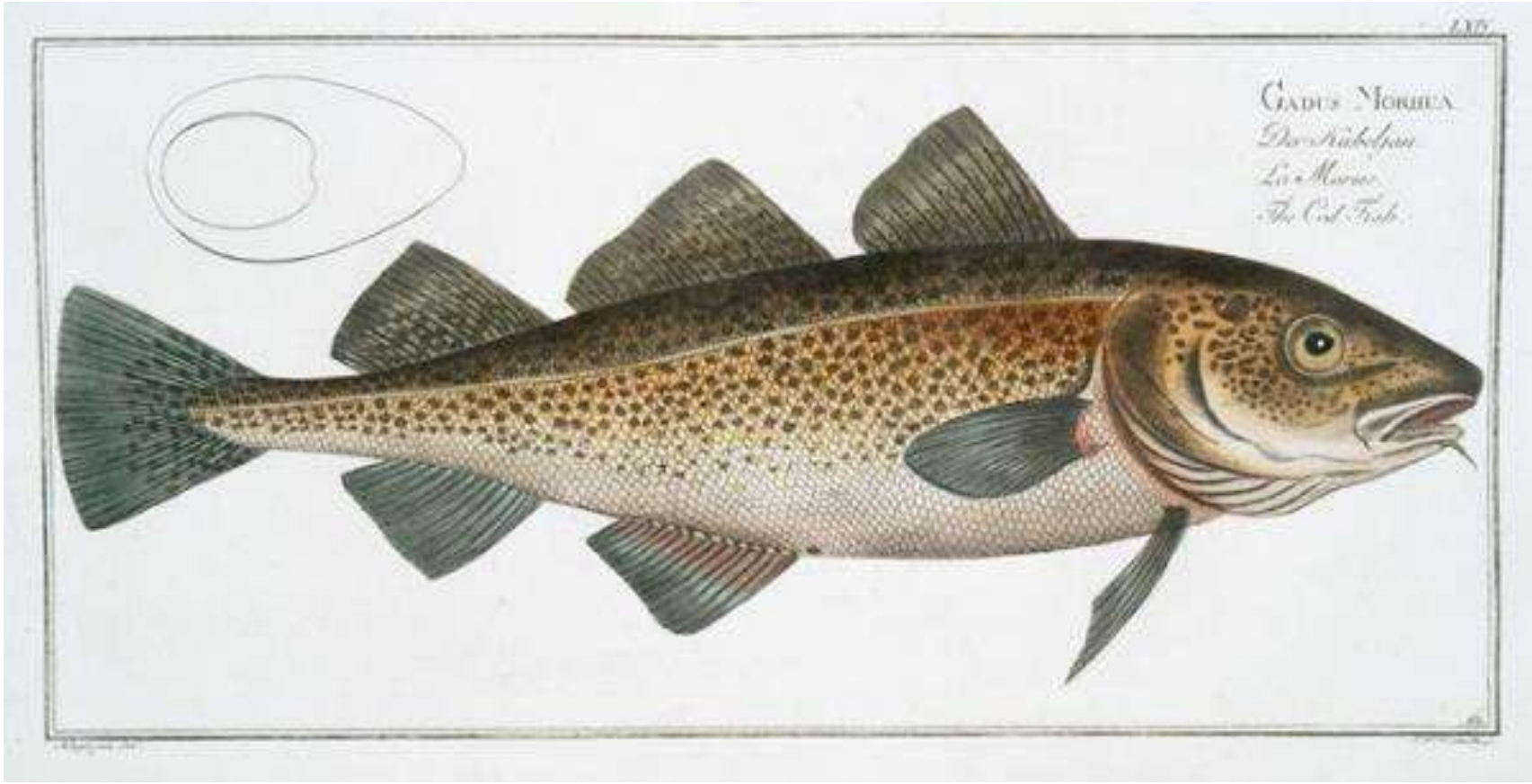
Science Theme II
„SOCIETY AND NATURE“

Nature and Culture

Our relation to science, nature, and the environment is vital for our future!

Objects

Art works



Exhibition objects

Voucher specimens

Books

ökonomiſche

Naturgeſchichte

der Fiſche Deutſchlands.

Mit ſieben und dreyßig Kupfertafeln nach Originalen.

Erſter Theil

Bücherei
13. DEZ. 1960
60:136

Berlin, 1783.

Auf Koſten des Verfaſſers, und in Commiſſion in der Buchhandlung der Realſchule.

XIII. 1653

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Digitization

Primary to Secondary

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0000000 0000 0001 0001 1010 0010 0001 0004 0128
0000010 0000 0016 0000 0028 0000 0010 0000 0020
0000020 0000 0001 0004 0000 0000 0000 0000 0000
0000030 0000 0000 0000 0010 0000 0000 0000 0204
0000040 0004 8384 0084 c7c8 00c8 4748 0048 e8e9
0000050 00e9 6a69 0069 a8a9 00a9 2828 0028 fdfc
0000060 00fc 1818 0018 9898 0098 d9d8 00d8 5857
0000070 00d7 7a79 0079 ab9a 00b9 3a3c 003c 8888
0000080 0088 8888 0088 288e be88 8888 8888
0000090 0088 8888 0088 7667 778e 8828 8888
00000a0 0088 8888 0088 8888 467c 585f 8814 8188
00000b0 8b06 e8f7 00aa 8388 8b3b 88f3 88bd e988
00000c0 8a18 880c 0088 e841 c988 b328 6871 688e 9588
00000d0 a948 5862 5884 7e81 3788 1ab4 5a84 3eec
00000e0 3d86 dcb8 5cbb 8888 8888 8888 8888 8888
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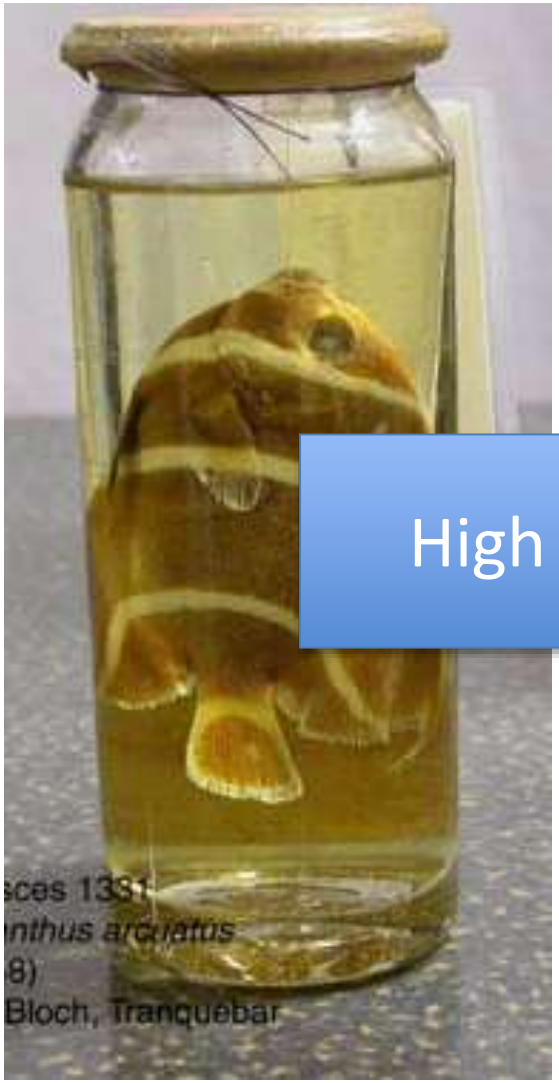
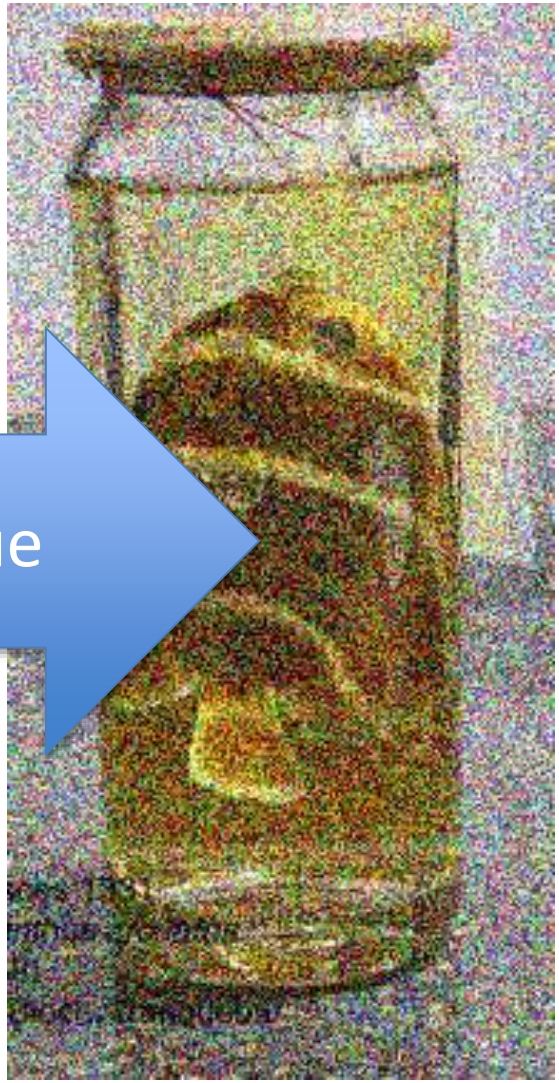
Digitization



High value to low value



Phasia aurigera

Resolution:	2952 x 1661
Vertical Perspectives:	13
Horizontal Perspectives:	10
Number of Images:	130

Institution:	Museum für Naturkunde Berlin
Collection:	Hymenoptera
Contact:	Martin Pluta
	01736216039
	01736216039

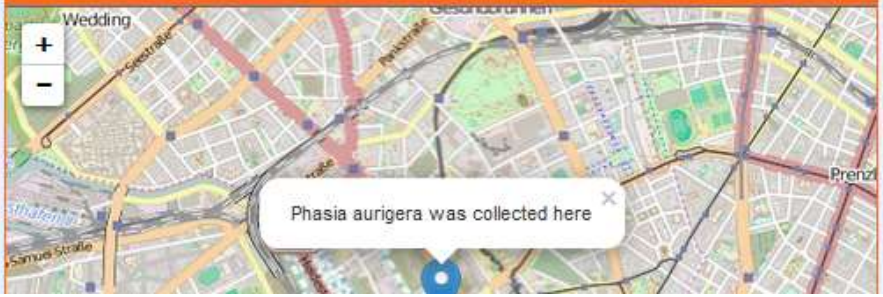
Taxonomy

Sequence | Catalog of Life

Class:	Insecta
Family:	Tchinidae
Genus:	Phasia

Interactive Preview

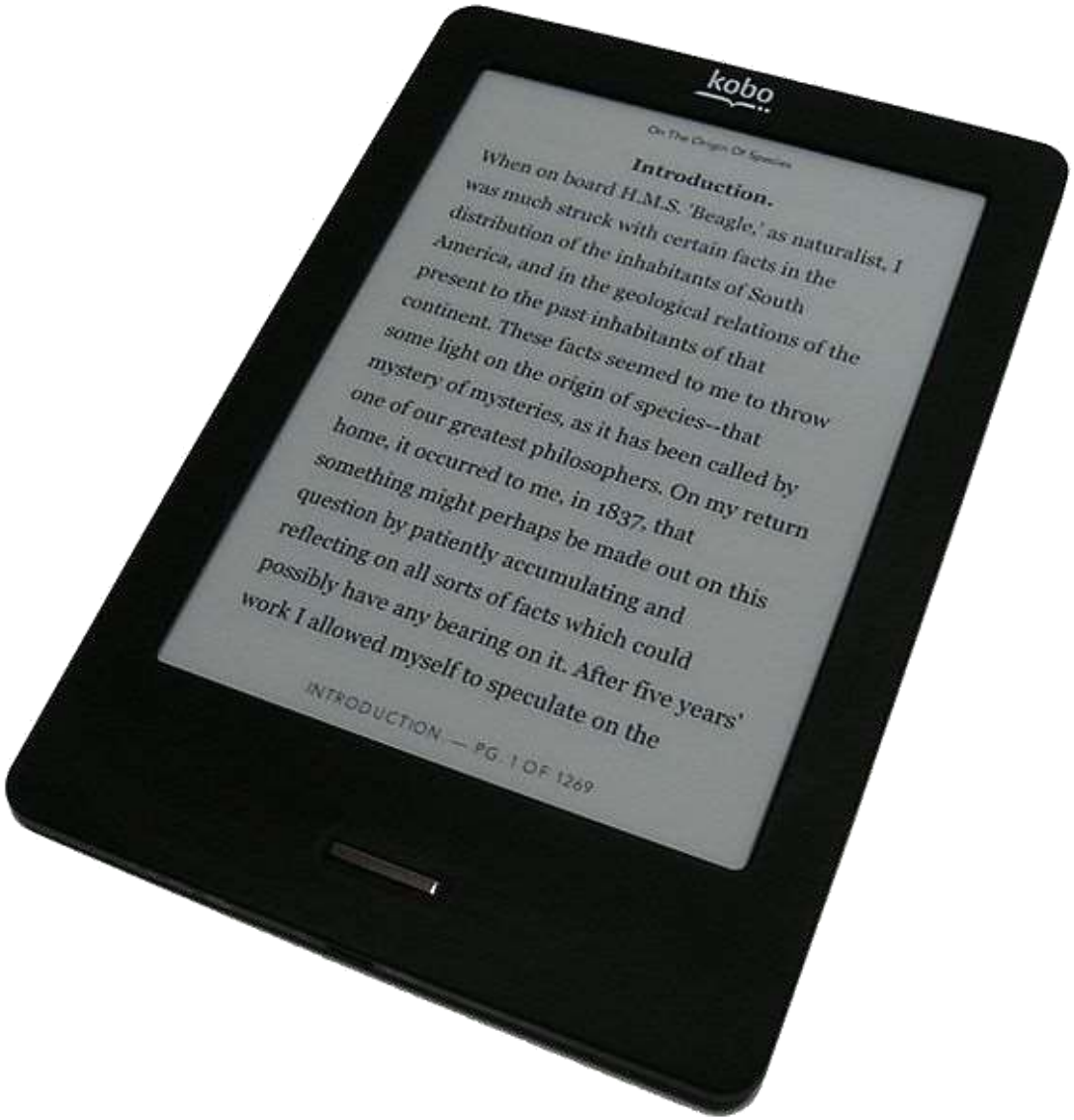
Place of Discovery



Immaterial Culture

Animal Sound Archive

Digital books



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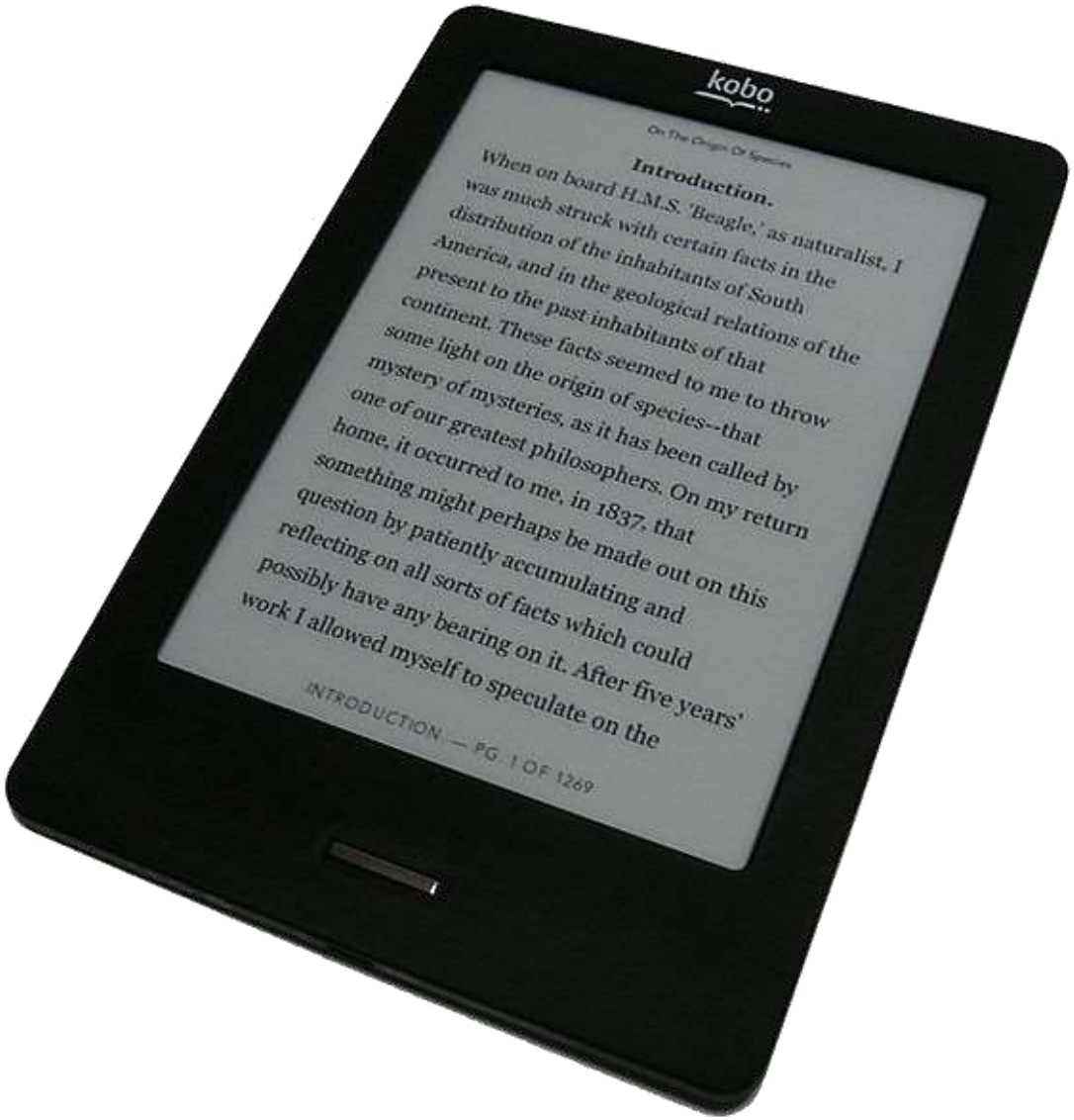
→ Native digital media collections are in scope and of high value!

THE_Dance?

THE_Novel?



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Singular artifact or work?

Text was
digital ≈2500
years ago

More types
now.

No big deal

Big deal for:

- Preservation
- Participation
- Education

But:

- Physical objects
- Native digital objects
- Abstract objects

are all valuable and in scope.

But:

- Physical objects
- Native digital objects
- Abstract objects

are all valuable and in scope.

Stop acting defensive!

Digital Preservation

Current situation @ Museum für Naturkunde

- 30 Mill. objects, > 100 separate collections
- **20 years object digitization in small projects:**
  - *Different databases, quality standards, information depth*
  - *Little coordination, little strategy possible*
- **Result: ca. 5 % metadata, ca. 1 % imaged**

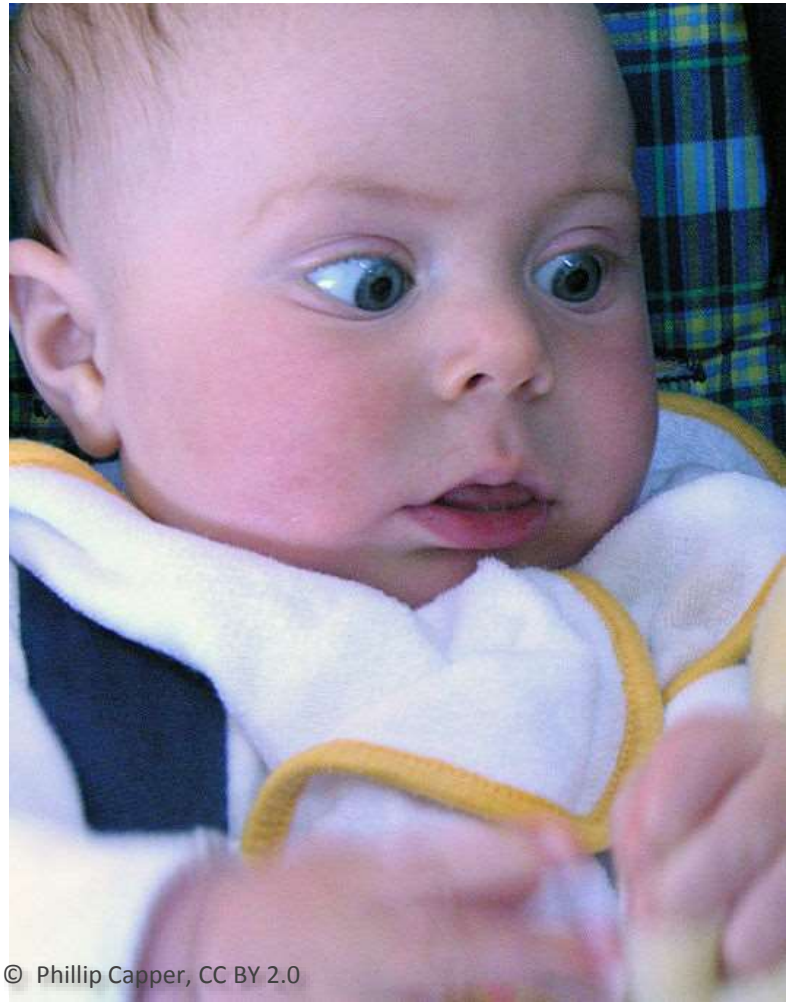
→ Plan for the next 400 years?

Storage requirement @ MfN

- Audio (Animal Sound Archive): ca. **12 TB**
- 2D-Image repository ca. **8 TB**
- 3D-repository
  - current:
    ca. **65 TB** aktiv + **30 TB** Rohdaten archiviert
  - Future increment/year:
    ca. **30 TB** aktiv + **20 TB** archiviert

Future

How can we manage this?



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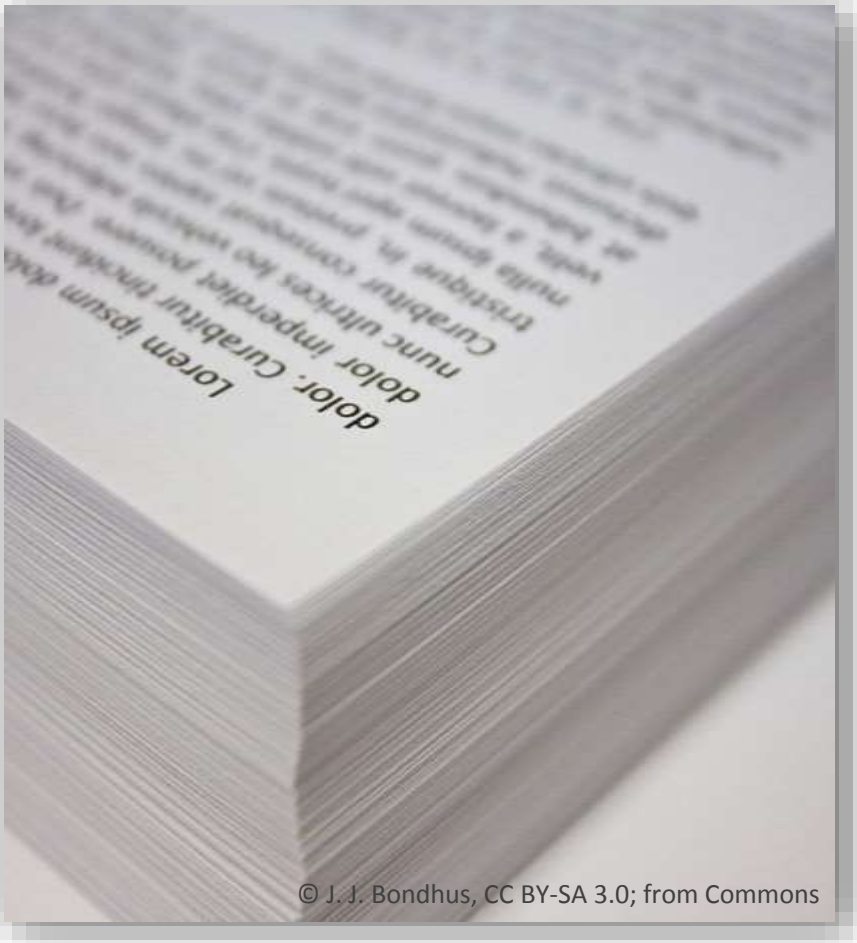
What is lasting?



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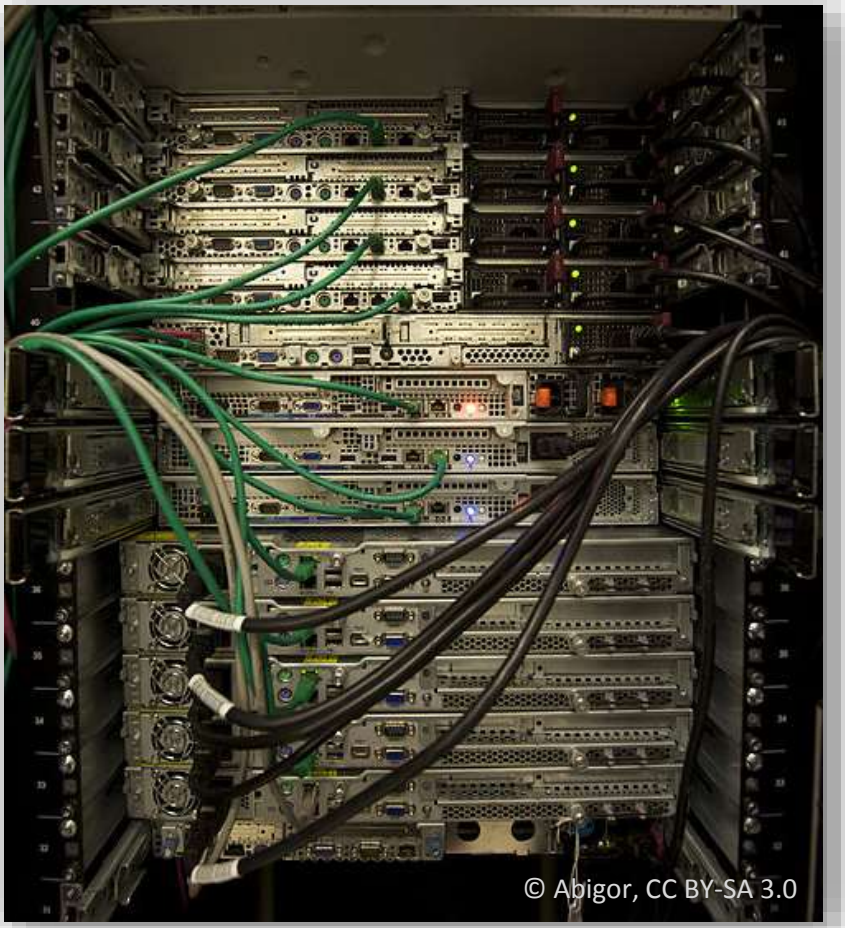
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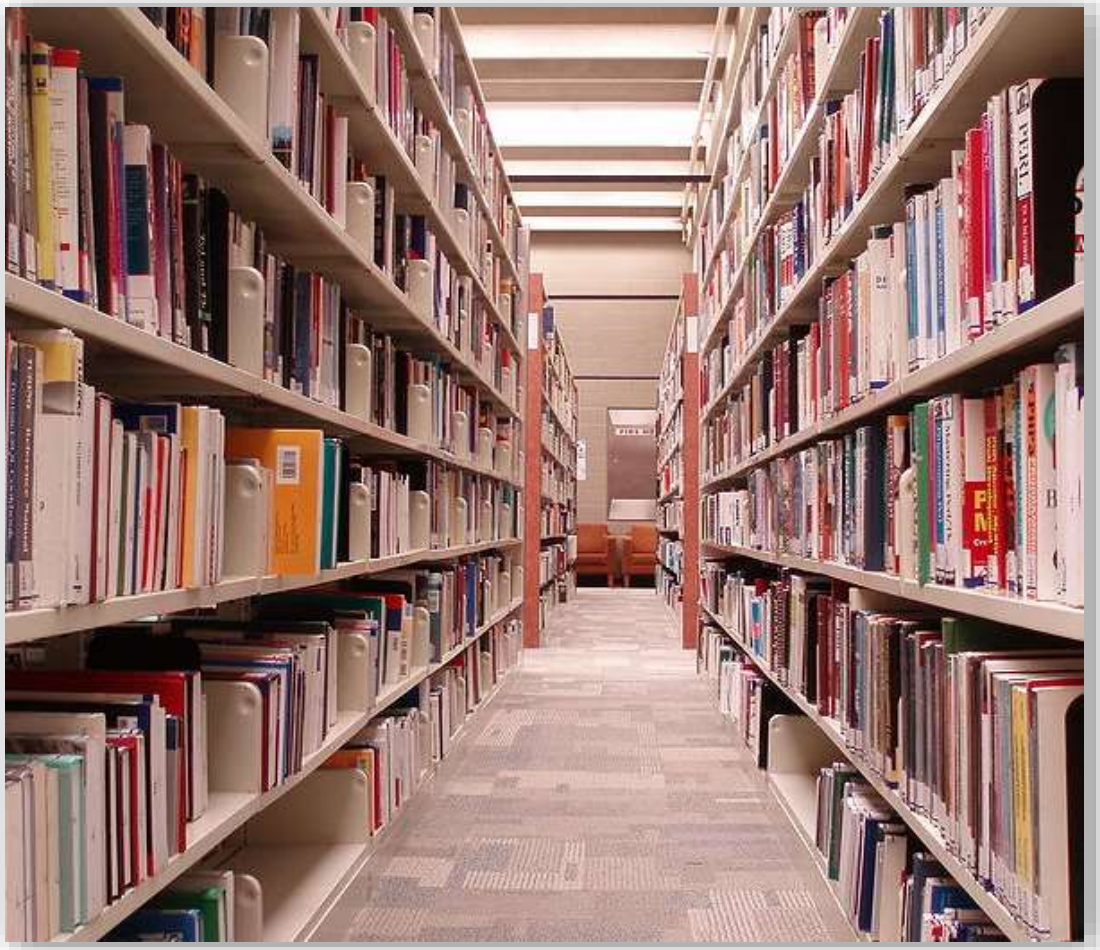

Experience …

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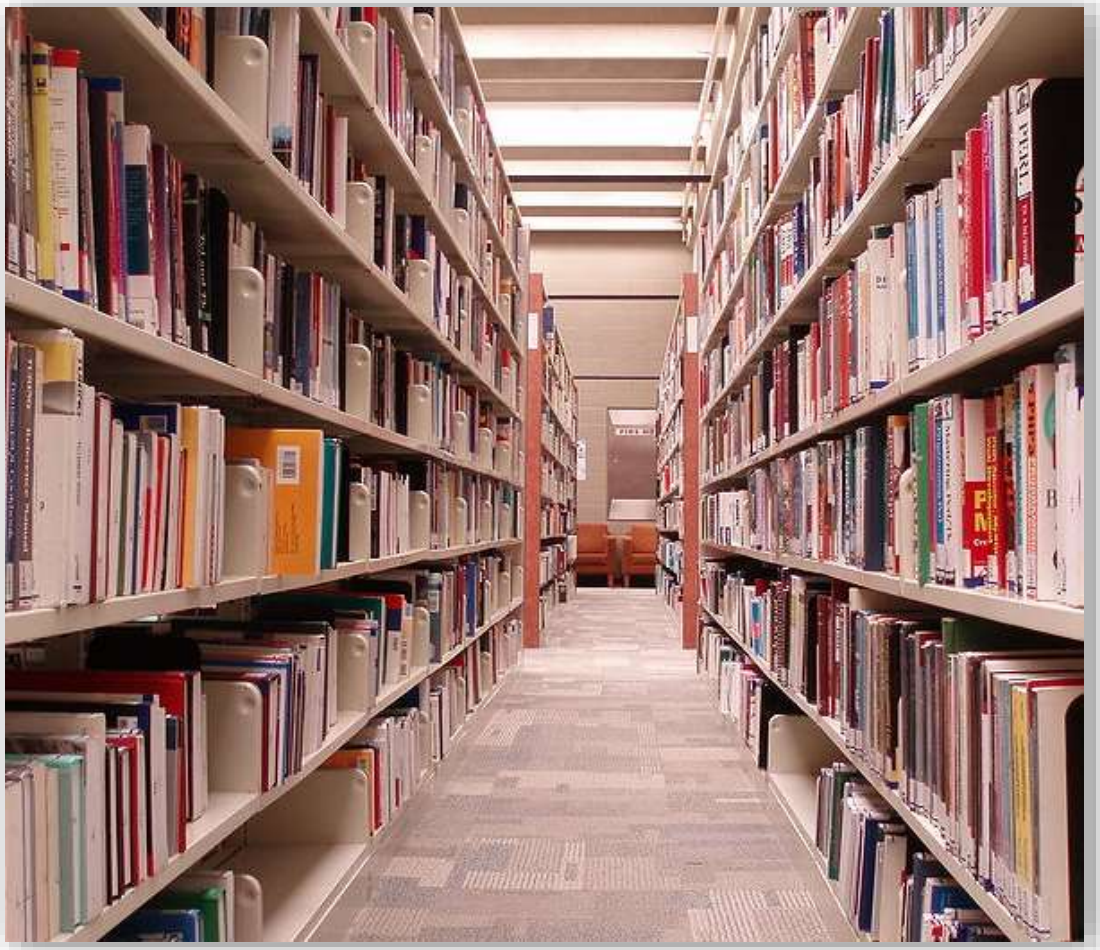
Anna Amalia Library, Weimar



500+ yrs **management experience** with paper

Lorem ipsum dolor
dolor. Curabitur
dolor imperdiet
nunc ultrices
Curabitur

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Only shared
knowledge
survives!

Preservation needs a sound legal basis!

Images, audio, video may be scientific research data or copyrightable works …

Data protection, privacy, personality rights …

Freedom of science …

Automated weighbridge for Adélie penguins - journal.pone.0085291.g002 CC BY 4.0
Lescroël, A. L.; Ballard, G.; Grémillet, D.; Authier, M.; Ainley, D. G. (2014) - Lescroël, A. L.; Ballard, G.; Grémillet, D.; Authier, M.; Ainley, D. G. (2014). …

… an important part of the solution!

(But the Creative Commons „non-commercial“ clause is usually a bad choice!)

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The Bouchout Declaration for Open Biodiversity Knowledge Management

The purpose of the Bouchout Declaration is to help make digital data about our biodiversity openly available. It offers members of the biodiversity community a way to demonstrate their commitment to open science.

Declaration

As signatories, we encourage an overarching approach to Open Biodiversity Knowledge Management which is based on the following fundamental principles: (...)

read more

News

The latest news and announcements covering the Declaration (...)

read more

Sign

Your signature is your commitment to an Open Biodiversity Knowledge Management system that will provide direct access to research data.

sign now

Tweets Follow

bouchout declaration 12h
@bouchoutdec
La prochaine présentation de la Déclaration aura lieu Vendredi, Juillet 11, à OpenDataWeek Montpellier
2014.rmll.info/conference364
@elnfraEU
Expand

bouchout declaration 8 Jul
@bouchoutdec
The Bouchout Declaration: A contribution from the biodiversity community to Open Digital Science
#openaccess @oatp
ec.europa.eu/digital-agenda...
Show Summary

bouchout declaration 7 Jul
@bouchoutdec
The impact of the Bouchout Declaration: Main points made by an expert panel #openaccess
@oatp @VertNetOrg @elnfraEU
bouchoutdeclaration.org/news/r
Expand

bouchout declaration 30 Jun

Tweet to @bouchoutdec

PUBLIC DOMAIN

To the extent possible under law, Bouchout Declaration has waived all copyright and related or neighboring rights to Website.

This project is funded under the European Union's Seventh Framework Programme (FP7/2007-2013) under grant agreement

Is HSM for service quality enough?

Or do we need strategies for deleting?

Preserve

↕

Access?

Bitstream or Semantic?

We need a
strategy for
collaboration!

Only shared
knowledge
survives!

Participation

(Jochen Jansen, CC BY-SA 3.0, from Commons)

Access?

Decorative Portals

…

Light and Dark

© 2005 David Monniaux CC BY-SA

Secure

Digital Cultural Heritage …
= digital assets stored in silos called museum data centers??

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Digital Cultural Heritage …
= digital assets stored in silos called museum data centers??

Misconception of knowledge and thinking!

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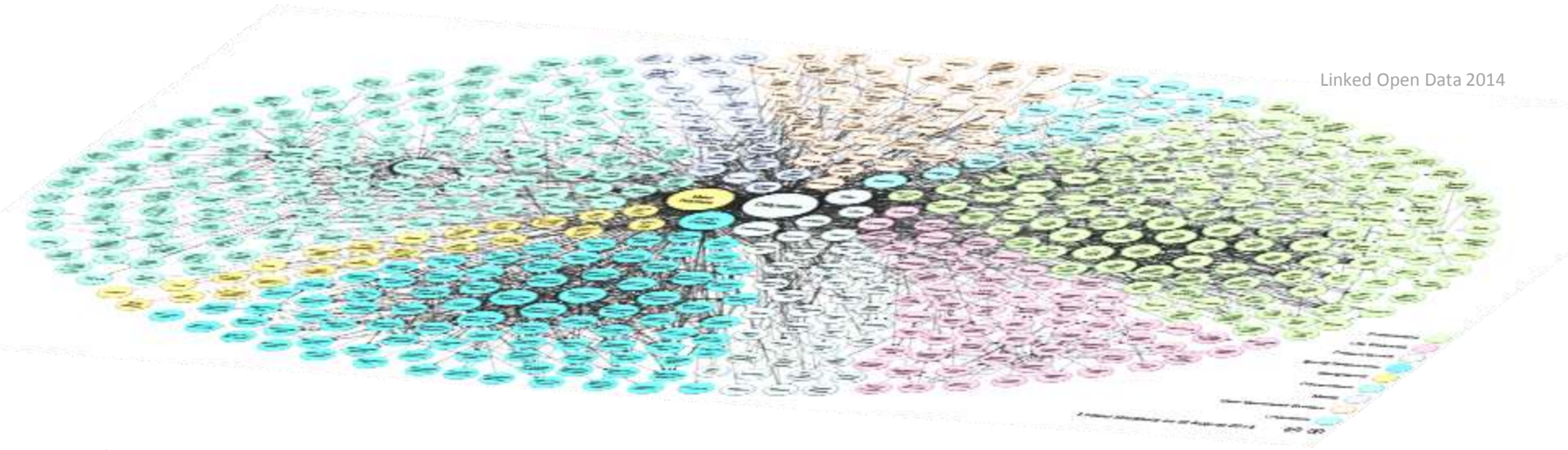
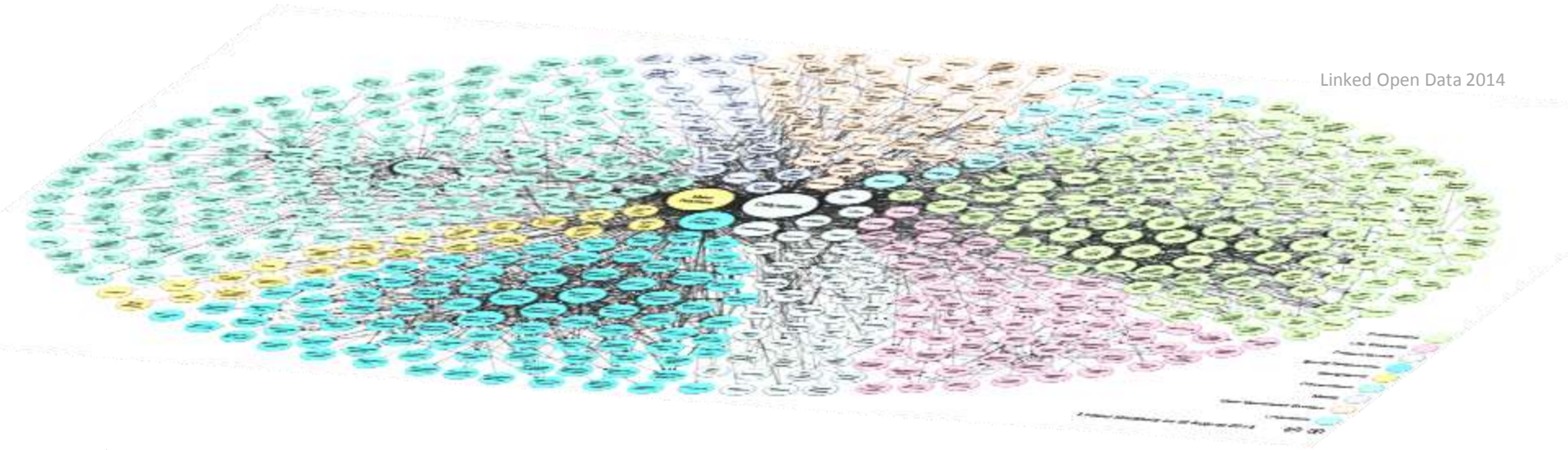
- **Knowledge is linking** and **Linking is knowledge!**
- The Web itself is the distributed Knowledge Organisation System (KOS) of the future!



Make sure the objects you curate are widely used through their **Semantic web identifiers**!



Linked Open Data 2014

Leibniz Gemeinschaft

museum für naturkunde berlin

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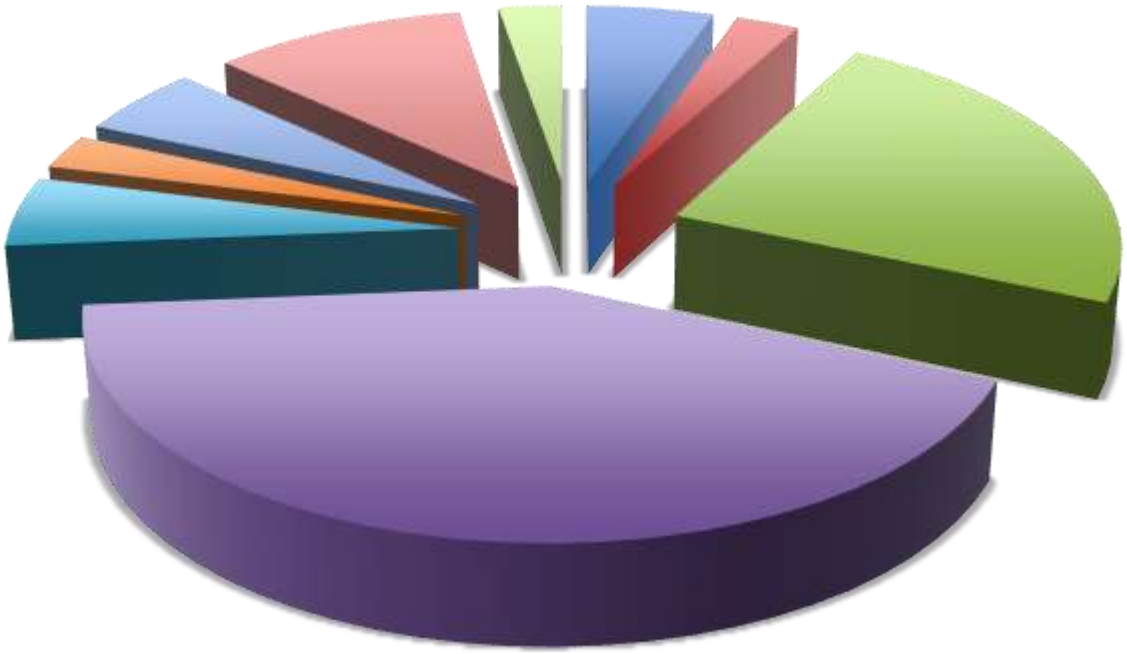
Secure

Open to a different view!

Citizen Science

(MfN hosts the ECSA – join!)



- Engineering
- Astrophysics and Astronomy
- Earth Sciences
- Ecology and Evolutionary Biology
- Forestry and Forest Sciences
- Microbiology
- Oceanography and Atmospheric Sciences and Meteorology
- Public Health
- Social and Behavioral Sciences

CitizenScienceAssociation.org

Citizen Scientists only “mechanical turks”, transcribing metadata, adding semantic annotations?

Levels of participation in CS:

- Crowdsourcing, cheap labor, mechanical turk; gamification (if used) is off-topic
- Data collection and gamification lead to topic-related learning experiences and engagement
- Collaborative problem and priority definition
- Collaborative Science 2.0 – problem definition, data collection, analysis and publication

arten|quiz.de

Leibniz-Gemeinschaft

museum für
naturkunde
berlin

arten|quiz.de

NABU natur|gucker.de museum für naturkunde berlin

Artenquizen macht Spaß!

Beschreiben Sie Merkmale, raten Sie die Arten!

1 2 3 4 5 6 7 8 9 10 11

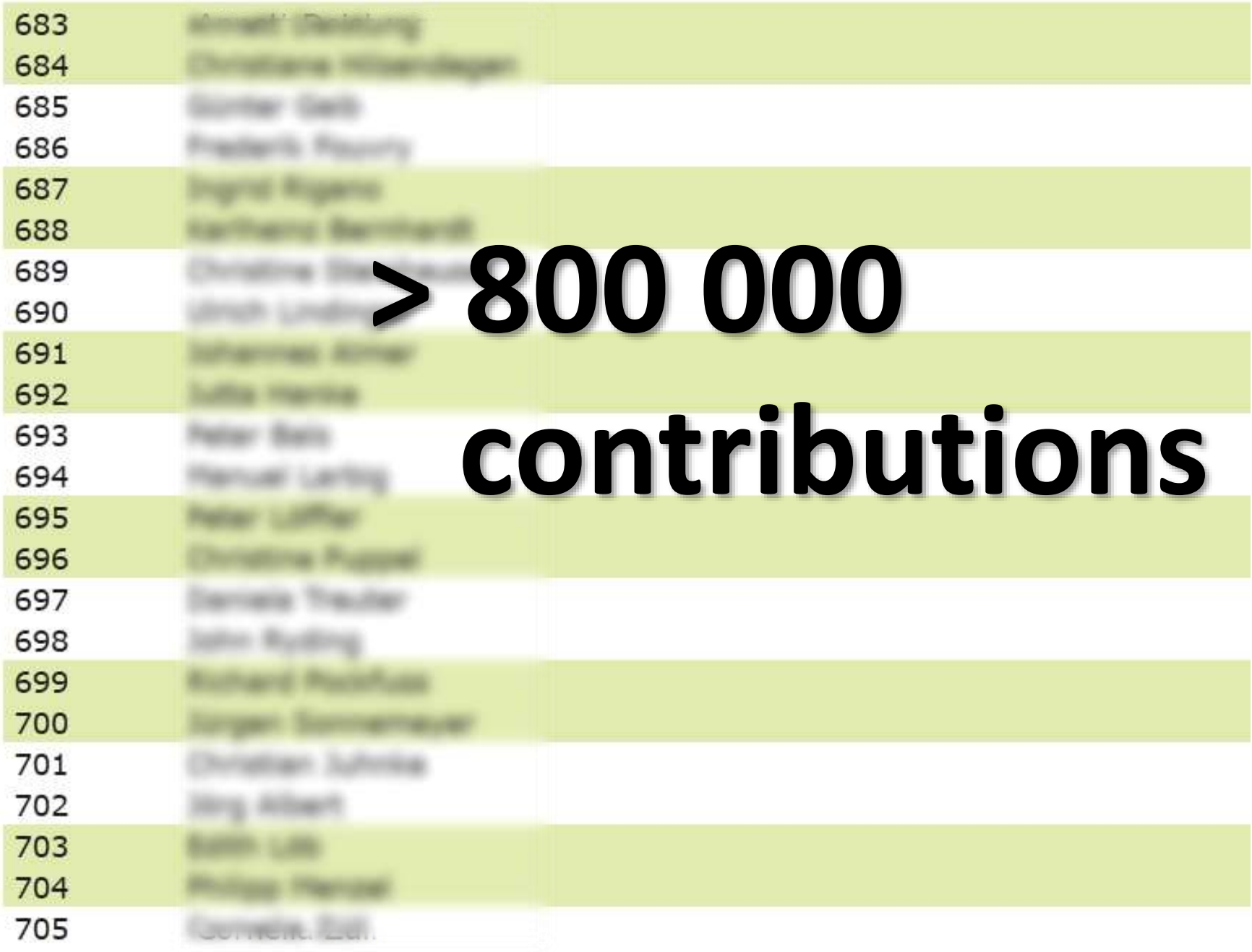
Größe (Mehrfachauswahl möglich)

auffällig große Tag- oder Nachtfalter (z. B. Schwalbenschwanz, Nachtpfauenaugen, größere Schwärmer)

mittelgroße Tag- oder Nachtfalter bis Zitronenfaltergröße (z. B. ...ohrenfalter etc.)

...e (z. B. Heufalter,

...otten,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> 800 000
contributions

Education

Museums are providers for raw material for educational works

{ COD1NG
DA V1NC1 }
Der Kultur-Hackathon
25./26. April & 5. Juli 2015

CODING DA VINCI
DER KULTUR-HACKATHON
26.&27. APRIL
1. ELEVATOR
ETHNOLOGISCHES MUSEUM
ERNST HÄCKEL HAUS
GEORG ECKERT INSTITUT
MAX PLANCK INSTITUT
BERLINER STADTMUSEUM
STAATSBIBLIOTHEK BERLIN
2. IDEA PITCHES
GRAPHIC RECORDING by @playability
okfnpad.org/p/codingdavinci
ADRESSDATEN: WER LEBTE FRÜHER IN MEINER STRASSE?
ALPHABET · AURELIUS
GAMIFICATION
VERBANNTE
ORCHESTER-APP MIT WELTANSICHT
THOMAS ALPHABET
PARTIZIPATION IM MUSEUM
ANTJE ABAKUS
FREDERIKE
FLORIAN + NOA
OCULUS RIFT: VR und DATEN
STEFAN
MUSEUM FÜR NATURKUNDE
hnf
UX DESIGN: TIER-ORCHESTER
VOGELSTIMMEN WECKER
DANCING CYBER-BEETLE
NS-VERBOTS-LISTE
TITEL, PERSONEN, ORTE VERKNÜPFEN
INTERAKTIVE TIERSTIMMEN INSTALLATION
»HABE NUN ACH...«
GOETHE 2 GO
NEUES INTERFACE
DIGITAL LIBRARY CONTENT PLUGIN für JOOMLA
europeana PRÄSENTATION
5 PILOT-THEMEN
· NATURAL HISTORY
· HISTORY
· TOURISM
· SOCIAL NETWORKS
· DESIGN
EINE VERANSTALTUNG von
DEUTSCHE DIGITALE BIBLIOTHEK
digiS
OPEN KNOWLEDGE FOUNDATION
AM 5./6. JULI GEHT'S WEITER!
CC BY-SA 2014
codingdavinci

MfN Daten genutzt von:

8 von 28 Projekten
4 von 17 Finalisten
2 von 5 Gewinnern

OpenAccess

But museums can contribute more!

Education
and
Participation

arten|quiz.de

Leibniz-Gemeinschaft

museum für
naturkunde
berlin

No learning without engagement

No engagement without learning

We learn where we love

We love to do.

Lets do.

United Nations Dekade der Biodiversität

Open Nature Guides („Offene Naturführer“)

Net PhyD Netzwerk Phytodiversität Deutschland

Naturkundliche Gesellschaft

DJN

KEY to NATURE

GEFD

GfBS Gesellschaft für Biologische Systematik

BfN Bundesamt für Naturschutz

FloraWeb

museum für naturkunde berlin

naturgucker.de

Amaranthus (Deutschland) – Offene Naturführer - Mozilla Firefox
http://www.offene-naturfuehrer.de/wiki/Amaranthus_(Deutschland)#
Amaranthus (... | Problem loadin... | Problem loadin... | Einleitung zur B... | Problem loadin... | Bestimmungshil... | In Baden-Württ... | IBIS-ID sample ... | Problem loadin...

4 * Längere Vorblätter der weiblichen Blüten ca. doppelt so lang wie das Perigon, ca. 4–6 mm. Griffeläste unten verdickt. Frucht am oberen Ende allmählich verschmälert. Blätter elliptisch, eiförmig bis leicht rhombisch (Abb. 6–8). (weniger anzeigen) ..... **Trauer-A. *A. hypochondriacus*** L.

(= *A. chlorostachys* var. *erythrostachys* Moq. Aellen, *A. hybridus* ssp. *hypochondriacus* (L.) Thell.)

15–140 cm. Zierpflanze aus dem *A. hybridus* agg., Abgrenzung zu *A. cruentus* nicht immer deutlich. Gelegentlich verwildert.

Abb. 6 *Amaranthus hypochondriacus*, Botanischer Garten Düsseldorf

Abb. 8 *Amaranthus hypochondriacus*, Frucht (Bild: Ulf Schmitz)

5 Blütenstand nicht bis zur Spitze beblättert, in blattloser Ährenrispe endend, darunter auch in blattachselständigen Knäueln ..... ► 6

5 * Blütenstand bis zur Spitze beblättert, Blüten ausschließlich in blattachselständigen Knäueln ..... ► 11

Amaranthus (Deutschland) – Offene Naturführer - Mozilla Firefox
File Edit View History Bookmarks Favorites Tools Help
http://www.offene-naturfuehrer.de/wiki/Amaranthus_(Deutschland)
Amaranthus (Deutschland) –...

Vertiefende Literatur

[Bearbeiten]

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- Thellung, A. (1914): *Amarantus*. In: Ascherson, P & Graebner, P.: Synopsis der Mitteleuropäischen Flora 5,1: 225–356, Leipzig (Engelmann).

Abbildungsübersicht

[Bearbeiten]

Pflanzen, ohne Fruchtaufnahmen

Abb. 1 *Amaranthus palmeri*, männl. Pfl., Hafen Neuss (Bild: Ulf Schmitz)

Abb. 2 *Amaranthus palmeri*, männl. Pfl., Hafen Neuss (Bild: Ulf Schmitz)

Abb. 3 *Amaranthus caudatus*, Botanischer Garten Düsseldorf (Bild: Ulf Schmitz)

Abb. 5 *Amaranthus crentus*, 'hot biscuit', Bot. Gart. Düsseldorf

Abb. 6 *Amaranthus hypochondriacus*, Botanischer Garten Düsseldorf

Abb. 7 *Amaranthus hypochondriacus*, Garten Uhl (Bild: Ulf Schmitz)

Abb. 9 *Amaranthus spinosus*, Herbarium Hafen Reisholz (Bild: Ulf Schmitz)

Abb. 11 *Amaranthus retroflexus*, Zonser Grind (Bild: Ulf Schmitz)

Abb. 12 *Amaranthus retroflexus*, Himmelgeister Rheinbogen

Abb. 14 *Amaranthus powellii*, Himmelgeister Rheinbogen (Bild: Ulf Schmitz)

Abb. 15 *Amaranthus powellii*, Himmelgeister Rheinbogen (Bild: Ulf Schmitz)

Abb. 18 *Amaranthus bouchonii*, Himmelgeister Rheinbogen (Bild: Ulf Schmitz)

Abb. 19 *Amaranthus bouchonii*, Zonser Grind (Bild: Ulf Schmitz)

Abb. 20 *Amaranthus bouchonii*, Himmelgeister Rheinbogen (Bild: Ulf Schmitz)

Abb. 23 *Amaranthus deflexus*, Port St Foy Garonne (Bild: Rolf Wilkirchen)

Abb. 24 *Amaranthus deflexus*, Herbarium (Bild: Ulf Schmitz)

Abb. 26 *Amaranthus bitum* ssp. *bitum*, Du-Baeckerwerth (Bild: Ulf Schmitz)

Abb. 27 *Amaranthus bitum* ssp. *bitum*, Weinberg Moselufer Reil

Abb. 29 *Amaranthus bitum* ssp. *emarginatus* var. *emarginatus*

Abb. 30 *Amaranthus bitum* ssp. *emarginatus* var. *emarginatus*

Abb. 32 *Amaranthus bitum* ssp. *emarginatus* var. *pseudogracilis*

Abb. 33 *Amaranthus blitoides*, Rheinaue Duisburg-Homberg (Bild: Ulf Schmitz)

Abb. 34 *Amaranthus blitoides*, Rheinaue Duisburg-Walsum (Bild: Ulf Schmitz)

Abb. 36 *Amaranthus albus*, Rheinaue Duisburg-Homberg (Bild: Ulf Schmitz)

Abb. 37 *Amaranthus albus*, Himmelgeister Rheinbogen (Bild: Ulf Schmitz)

Makroaufnahmen der Früchte

Abb. 4 *Amaranthus caudatus*, Frucht (Bild: Ulf Schmitz)

Abb. 8 *Amaranthus hypochondriacus*, Frucht (Bild: Ulf Schmitz)

Abb. 10 *Amaranthus spinosus*, Frucht (Bild: Ulf Schmitz)

Abb. 13 *Amaranthus retroflexus* Frucht (Bild: Ulf Schmitz)

Abb. 16 *Amaranthus powellii*, Frucht (Bild: Ulf Schmitz)

Abb. 17 *Amaranthus powellii*, Frucht (Bild: Ulf Schmitz)

Abb. 21 *Amaranthus bouchonii*, Frucht (Bild: Ulf Schmitz)

Abb. 22 *Amaranthus bouchonii*, Frucht (Bild: Ulf Schmitz)

Abb. 25 *Amaranthus deflexus*, Frucht (Bild: Ulf Schmitz)

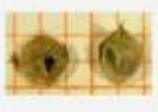

Abb. 28 *Amaranthus bitum* ssp. *bitum*, Frucht (Bild: Ulf Schmitz)

Done
zotero 1601x1200 de-DE

Bestimmungsschritte

Kontrolle/Revision

Ergebnis

Bild vergrößerbar

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Barbula convoluta in Pflasterritzen, Neuss.
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City Nature App

(coming)

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… shopping window

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