



SPNHC &
ICOM NATHIST
Edinburgh 2020
7-13 June



FRIEDRICH-SCHILLER-
UNIVERSITÄT
JENA

An advanced method of non-traditional bird skin preparation, to ease applications of scientific methods and enhance the value of avian collections

Bernhard Bock¹ & Matthias
Krüger²



PHYLETISCHES MUSEUM



OROBATES
MUSEUM DER PALÄONTOLOGIE
UNIVERSITÄT ZÜRICH
16. April - 11. August 2016



ONTOGENIE

PHYLOGENIE



GENERELLE MORPHOLOGIE
DER ORGANISMEN.

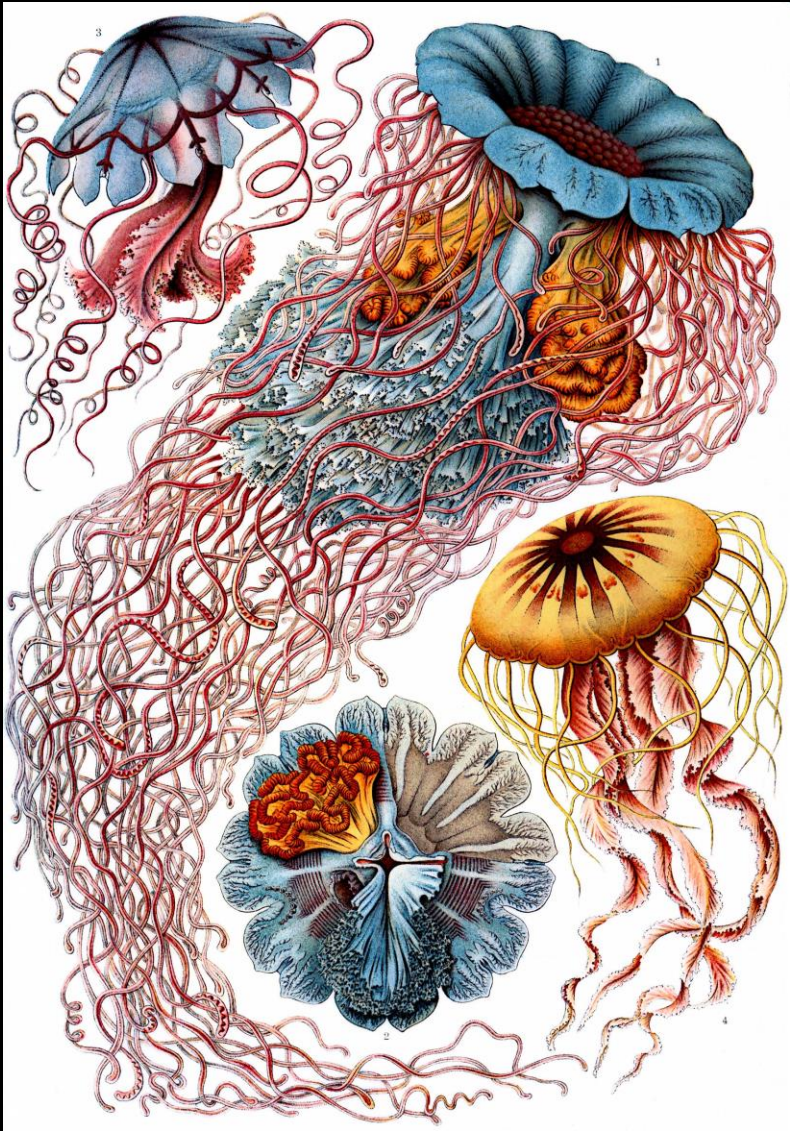
ALLGEMEINE GRUNDZÜGE
DER ORGANISCHEN FORMEN-WISSENSCHAFT,
MECHANISCH BEGRÜNDET DURCH DIE VON
CHARLES DARWIN
REFORMIRTE DESCENDENZ-THEORIE.
VON
ERNST HAECKEL.

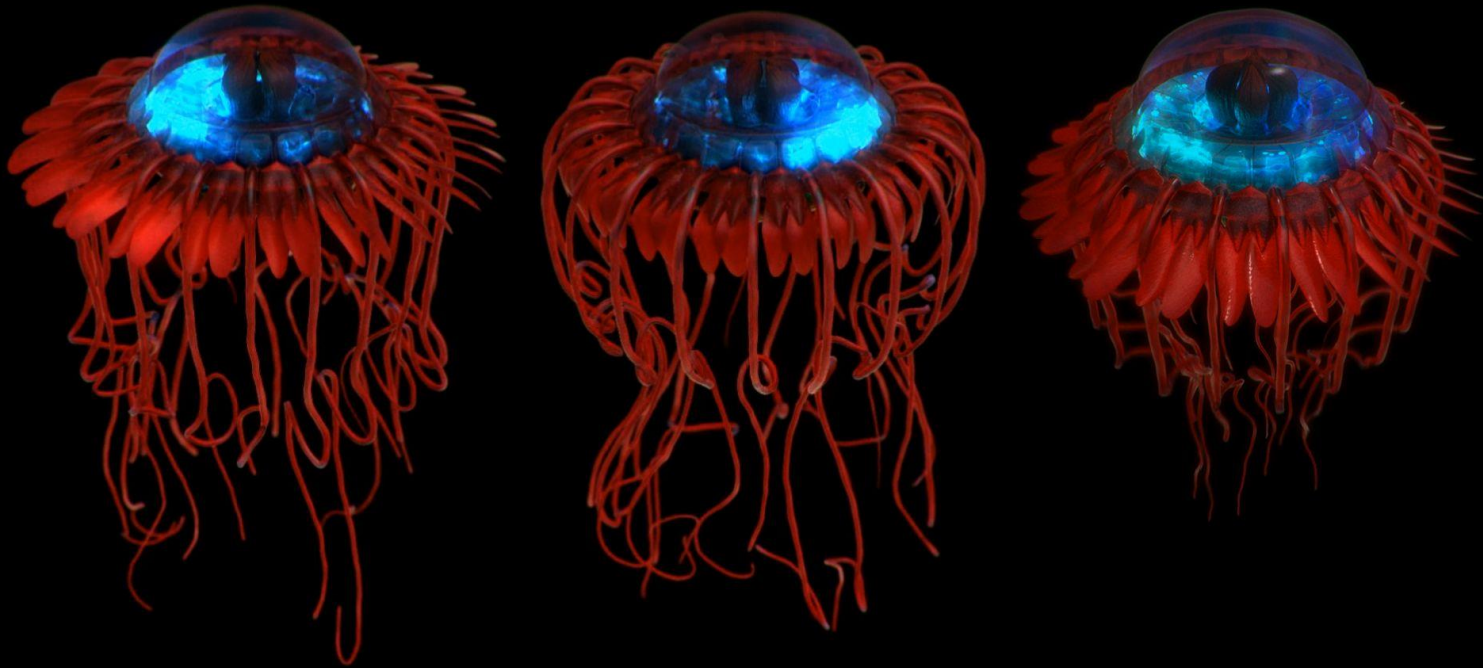
ERSTER BAND:
ALLGEMEINE ANATOMIE
DER ORGANISMEN.

„E PUR SI MUOVE!“

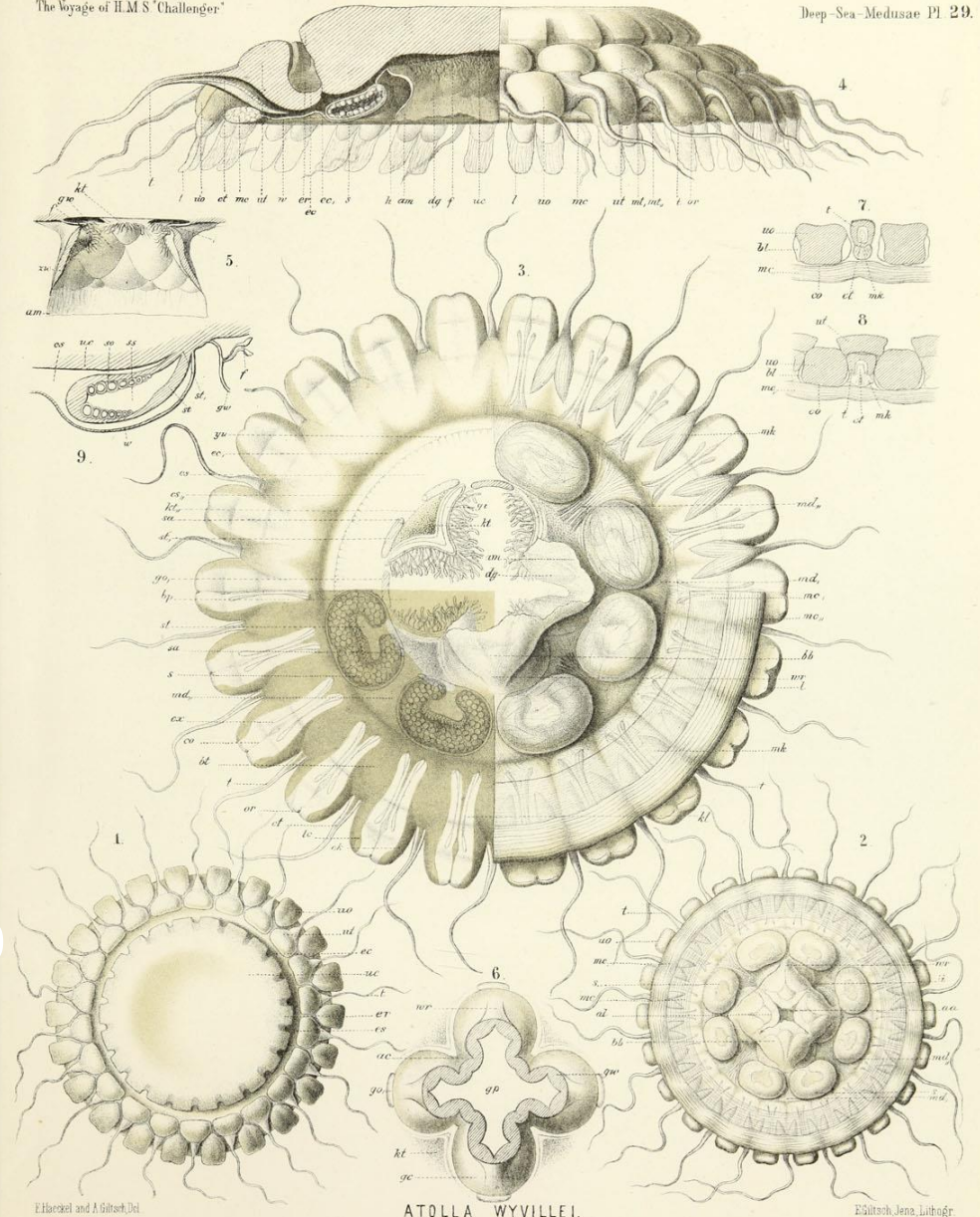
MIT ZWEI PROMORPHOLOGISCHEN TAFELN.

BERLIN.
DRUCK UND VERLAG VON GEORG REIMER.
1866.





Atolla wyvillei Haeckel, 1880





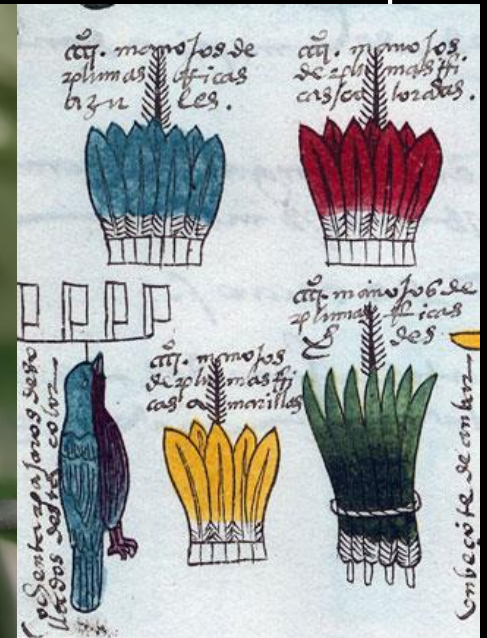
Friedrich II von Hohenstaufen ~1248



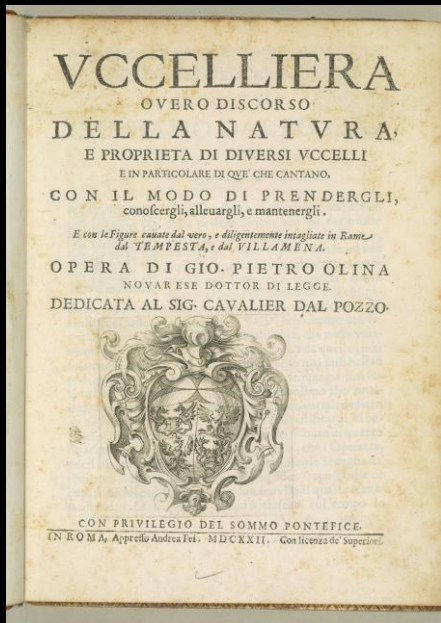
Egypt, 2000-1001 BCE



Aztecs, around 1300



Olina, 1622



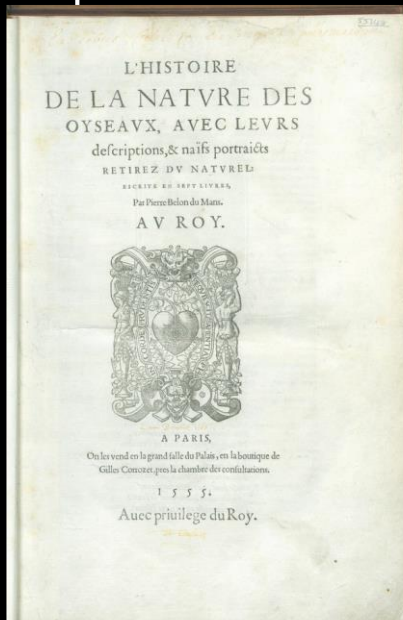
Aitinger, 1626

TAXIDERMIE (r) (des mots *τάξις*, ordre, arrangement, et *δέγμα*, peau).
 Les sciences naturelles n'ont pu nécessairement faire de progrès qu'à mesure que les musées se sont multipliés et perfectionnés dans l'art de préparer, monter et conserver les animaux. C'est seulement vers la fin du dernier siècle que les collections d'animaux morts ont paru rappelées à la vie par les talens de Lerot, Desmoulins, Levaillant, &c. La révolution a fait disparaître de la capitale une assez grande quantité de collections d'histoire naturelle; mais ce bouleversement de l'ordre général des choses, toujours si funeste aux

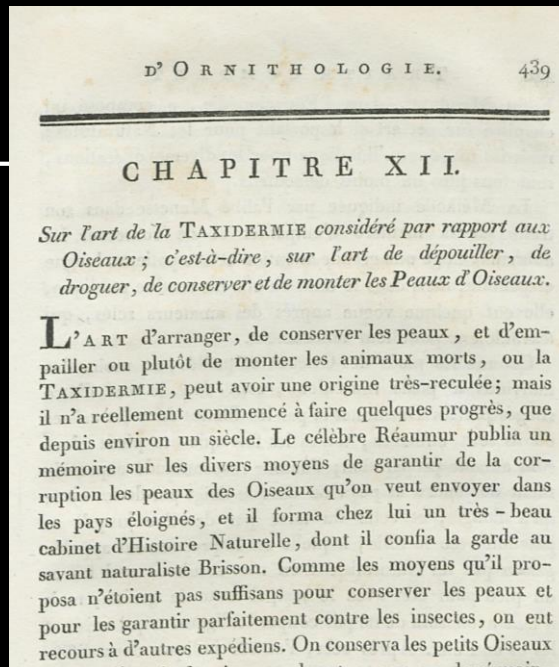
in *Nouveau dictionnaire d'histoire naturelle XXI*

"*taxidermy ... from the words *táxis*, order, arrangement, and *dérma*, skin*"

Dufresne, 1803



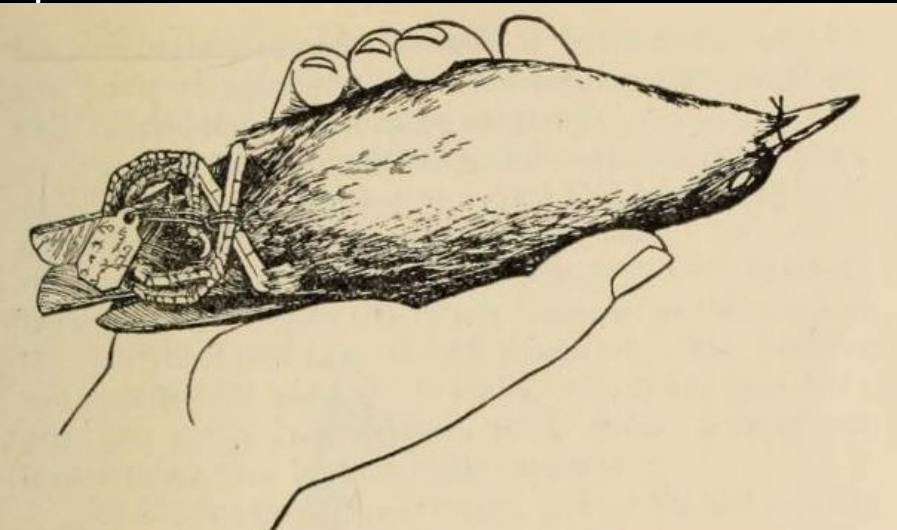
Belon, 1555



in *Traité élémentaire et complet d'ornithologie*

"*On the art of taxidermy considered in relationship to birds, or on the art of removing, treating, preserving and mounting the skins of birds*"

Daudin, 1800

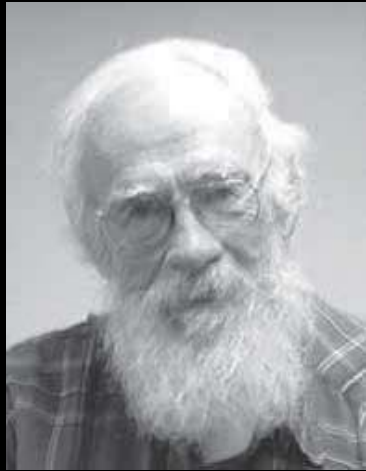


Chapin, 1923



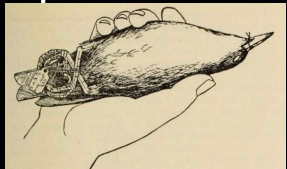
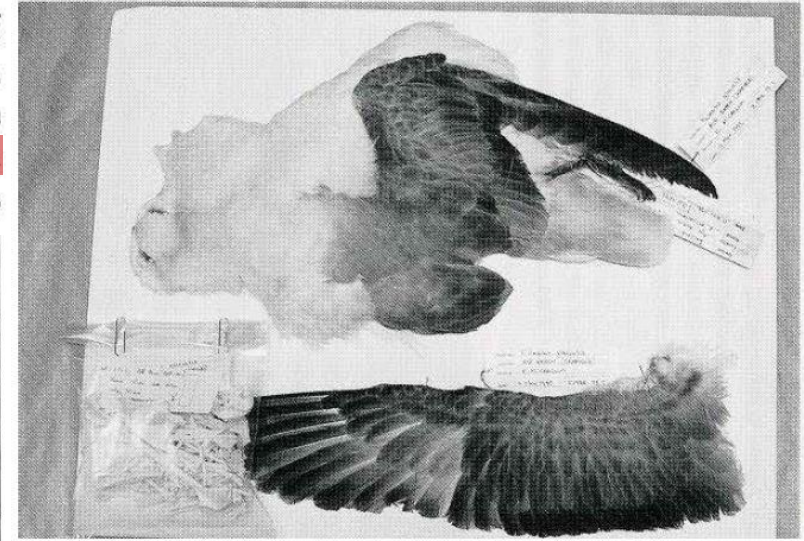
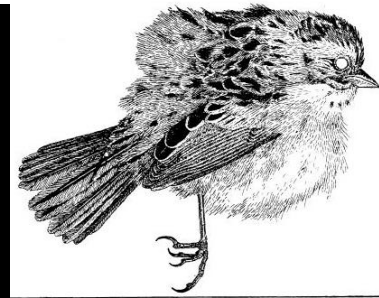
Aquila chrysaetos (golden eagle)

10 cm



Norris, 1961

A New Method of Preserving Bird Specimens.—In the fall and winter of 1957–1958 I had occasion to preserve more than a hundred birds, mostly passerines, which had been killed at a television tower south of Aiken, Aiken County, South Carolina. In the course of this work I evolved a method whereby both the skin and the major part of the skeleton of a given specimen could be saved. This method is as follows.

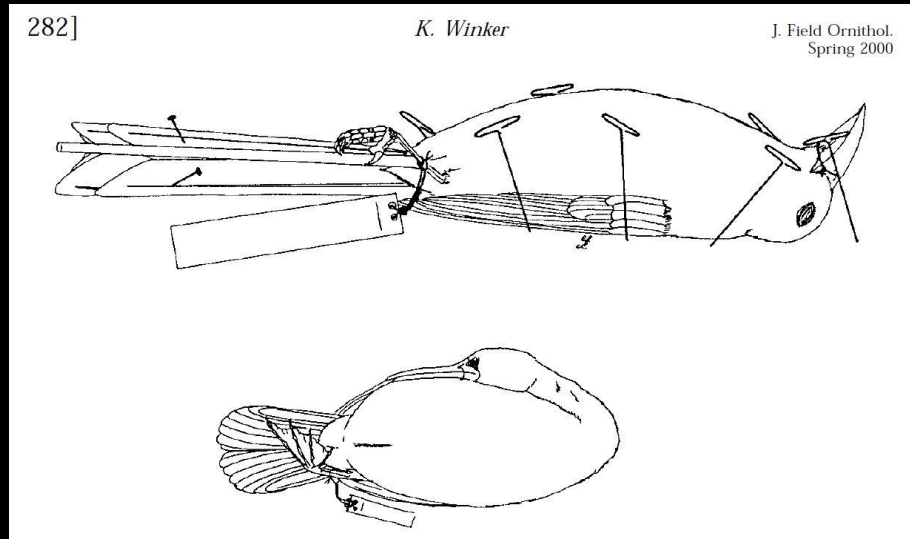


Chapin, 1923



Bub, 1969

digitization?



Winker, 2000

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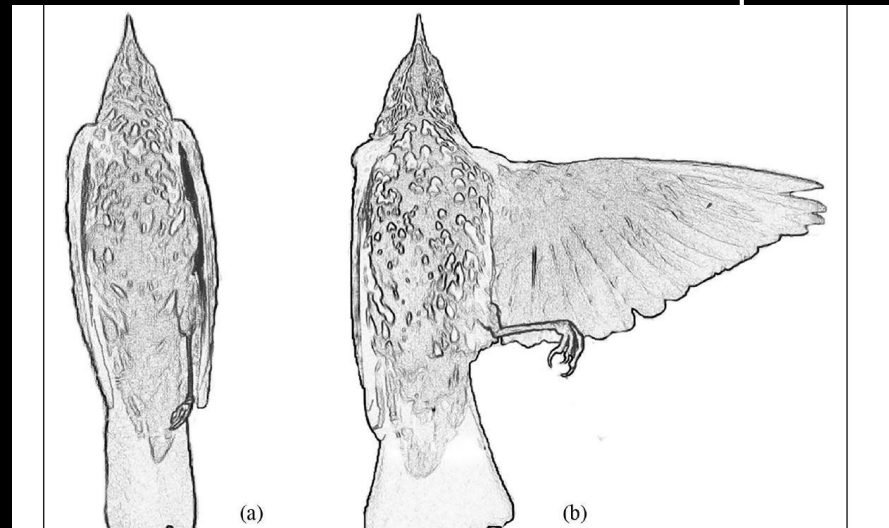
An advanced method of non-traditional bird skin preparation, to ease applications of scientific methods and enhance the value of avian collections

Bernhard Bock¹ & Matthias Krüger²

^{1,2} Friedrich-Schiller-Universität Jena, Phyletisches Museum

Wednesday, Jun 8, 2022

Today



Carrillo-Ortiz et al., 2021

digitization
?

FUSION



seven simple steps

WARNING

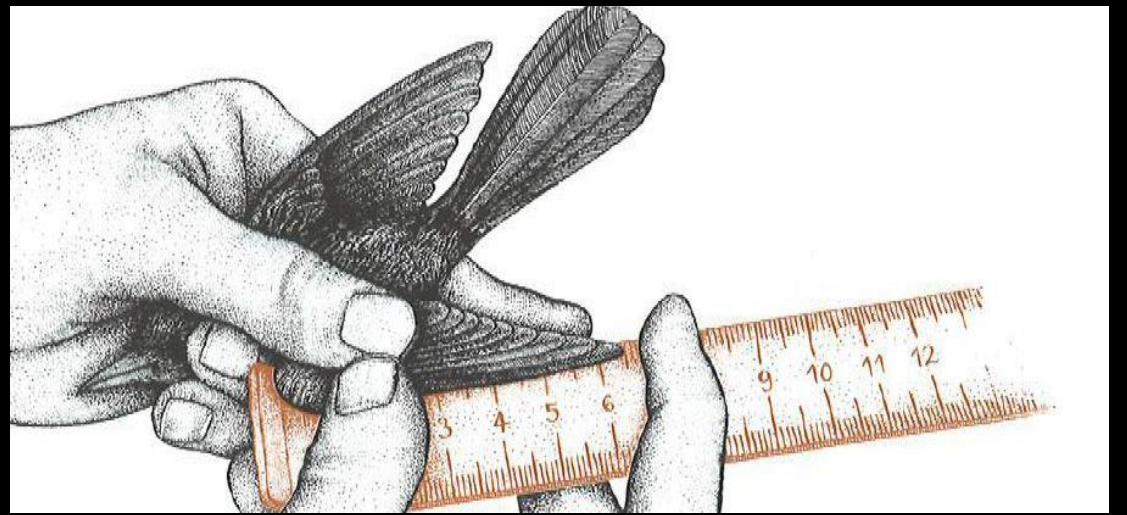
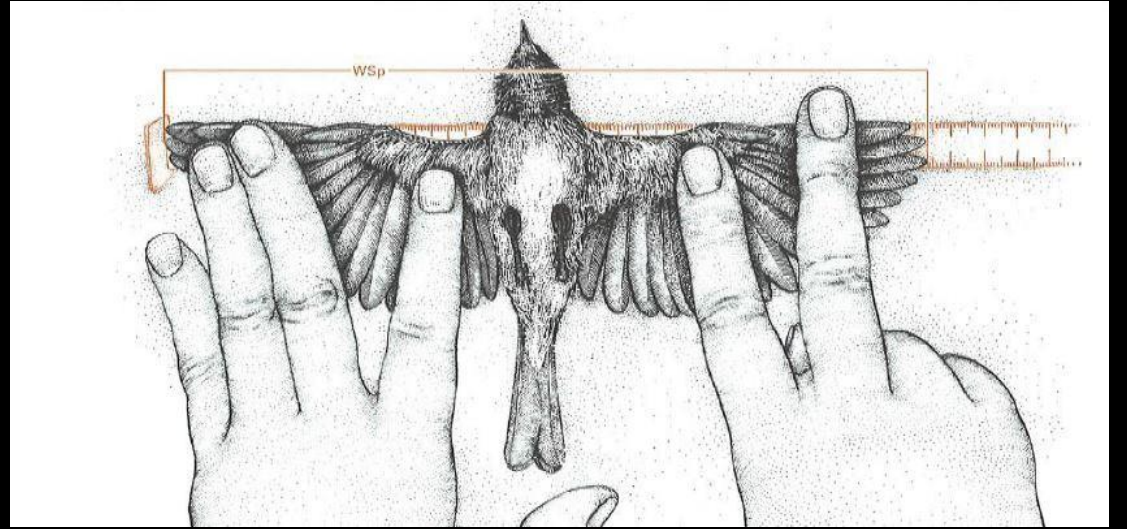
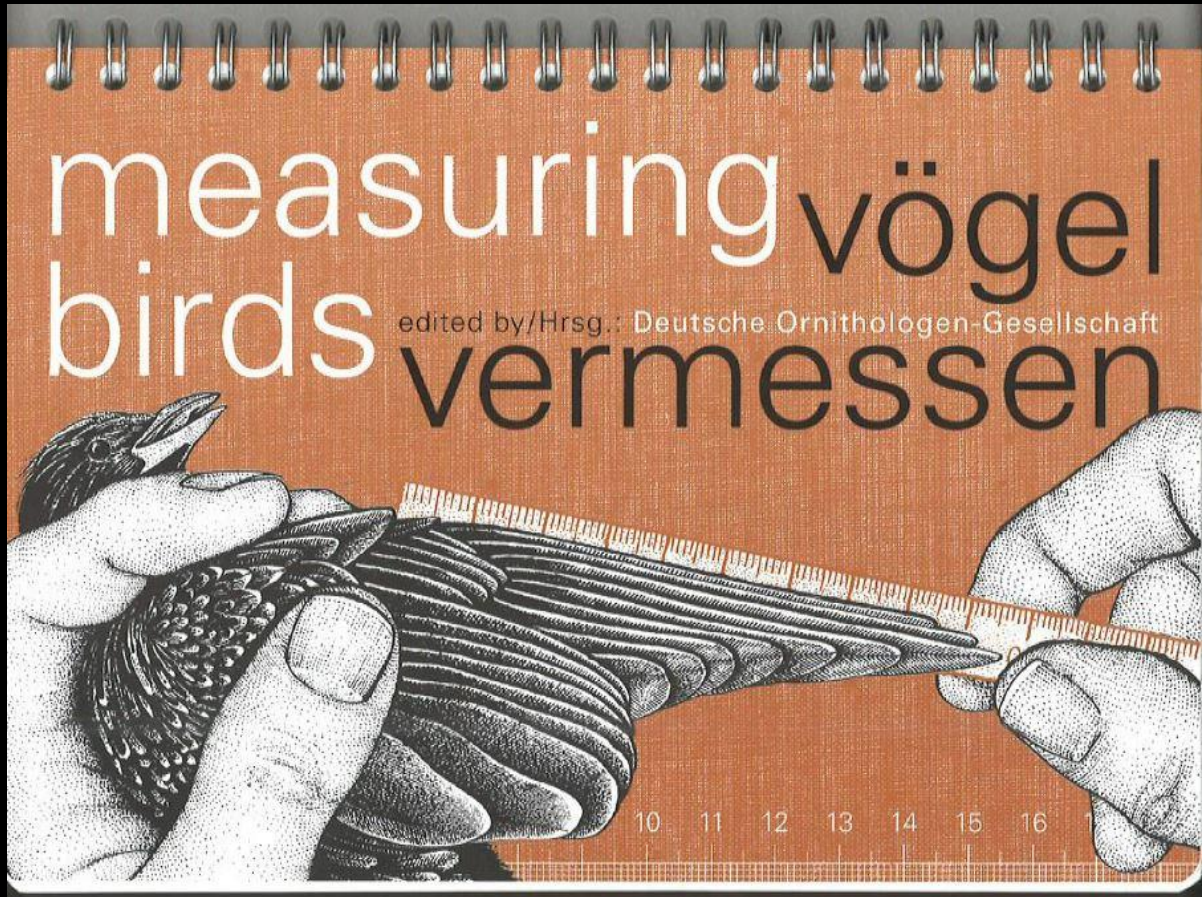
Disturbing images

step
1



Gloves
?

step
1



step
2



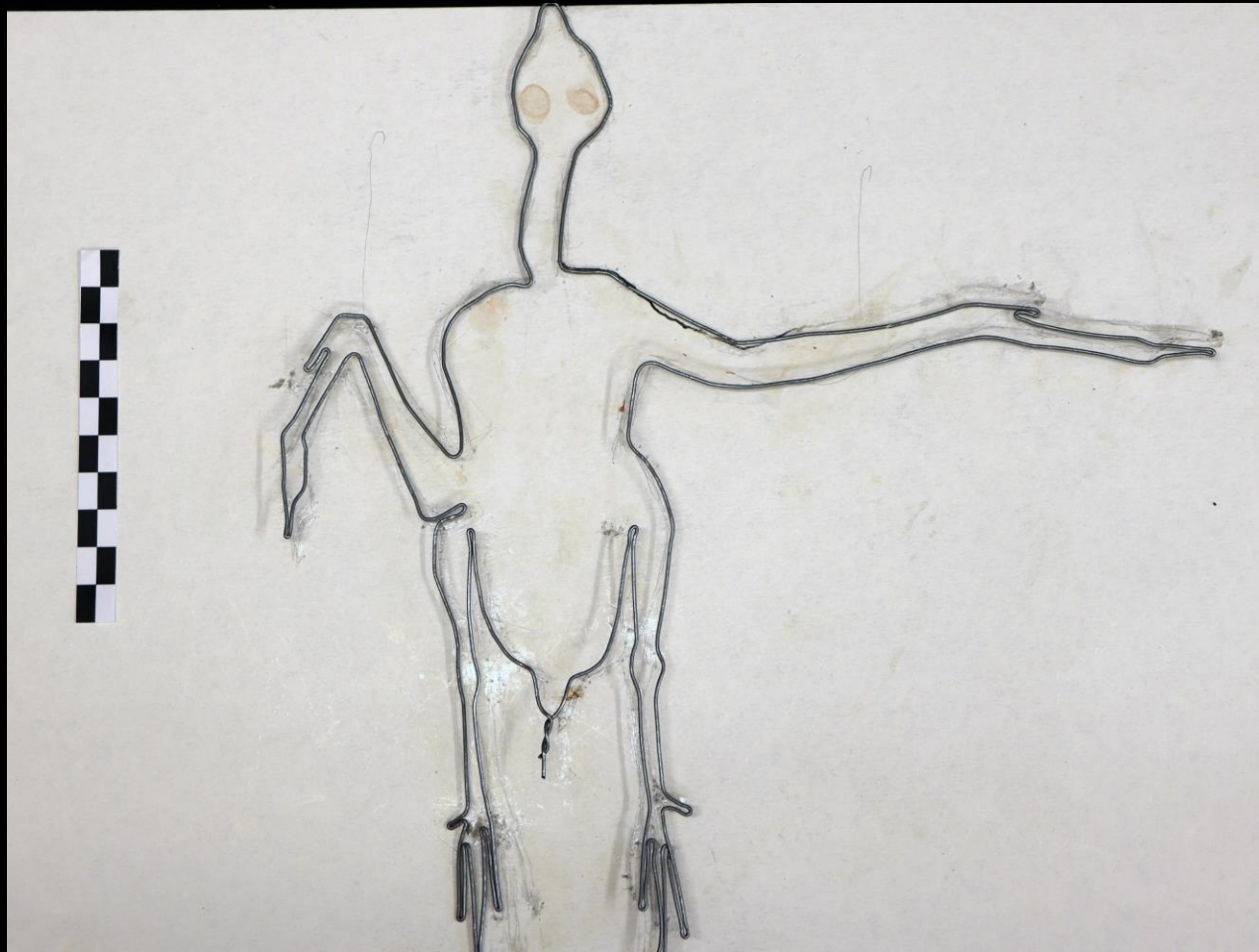
step
2



step
3



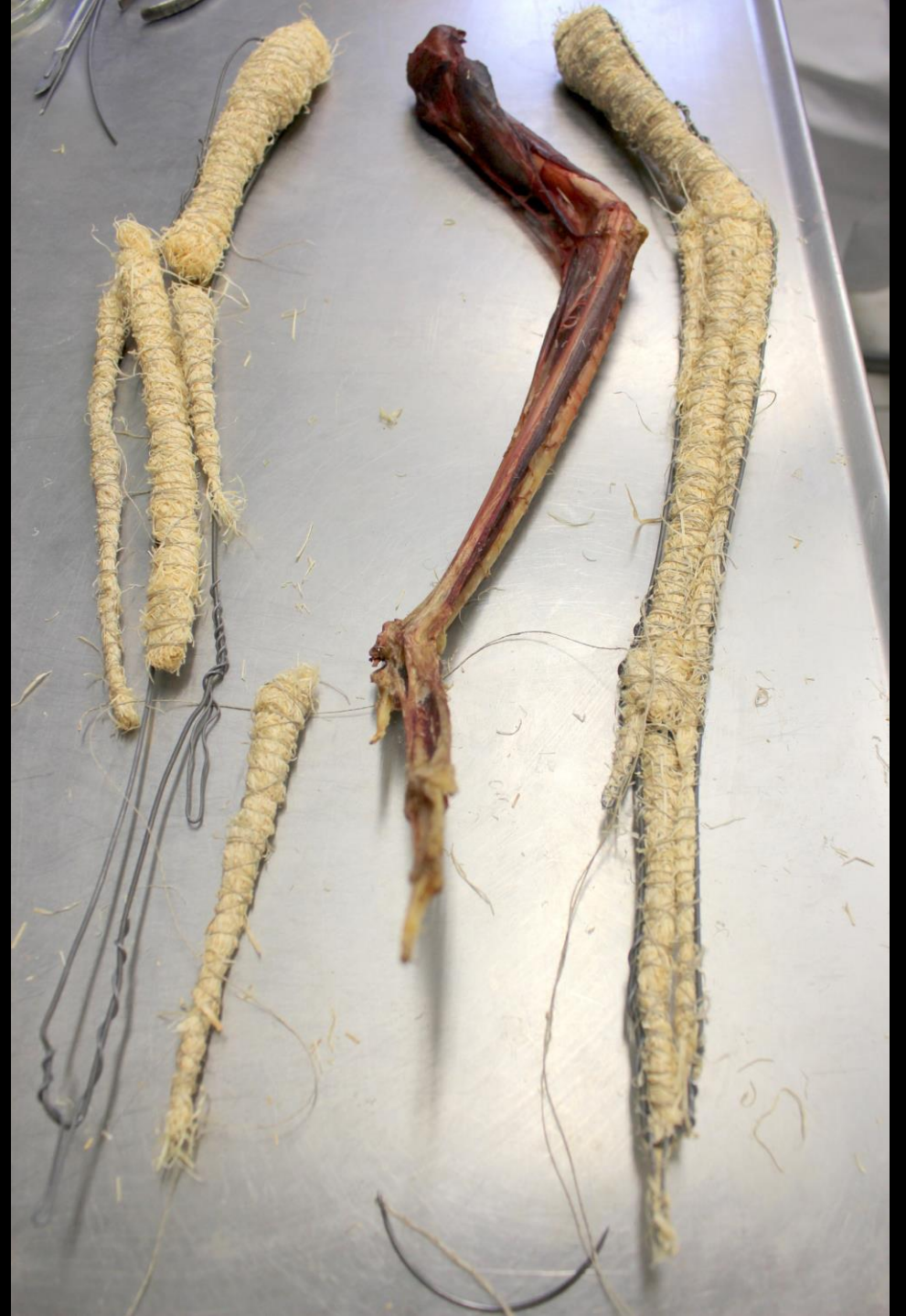
step
4



step
4



wearing gloves



step
5



step
6



step
7



results

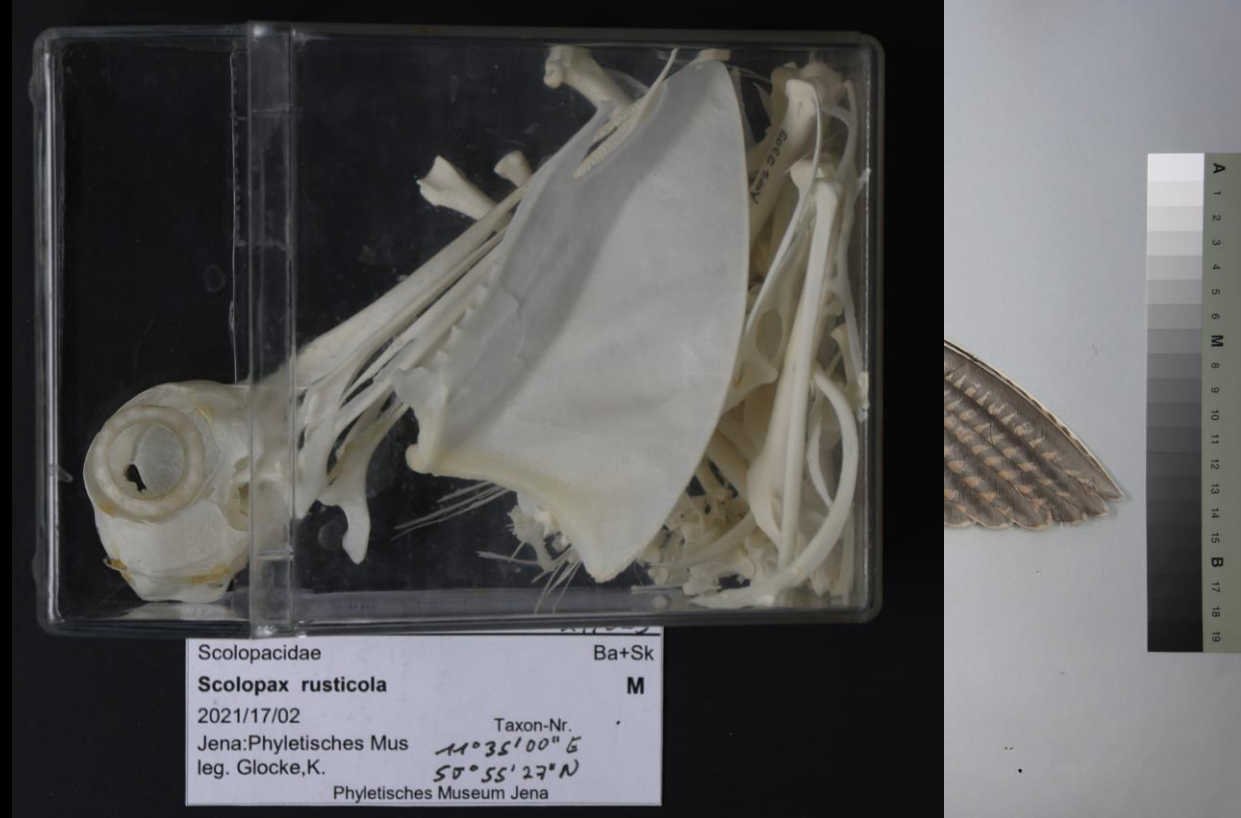


results



results





results



conclusion

pros

- best suited for examination
- comfortable to digitize
- whole skeleton available → more data!
- less storage space
- lesser pests (own observations)
- easy to apply new methods e.g. scans/3D-reconstruction → new insights (noninvasive)

cons

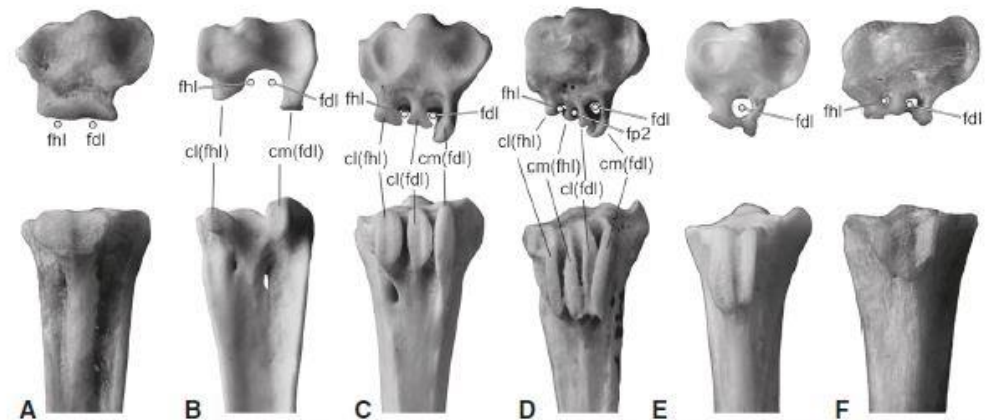
- more time consuming

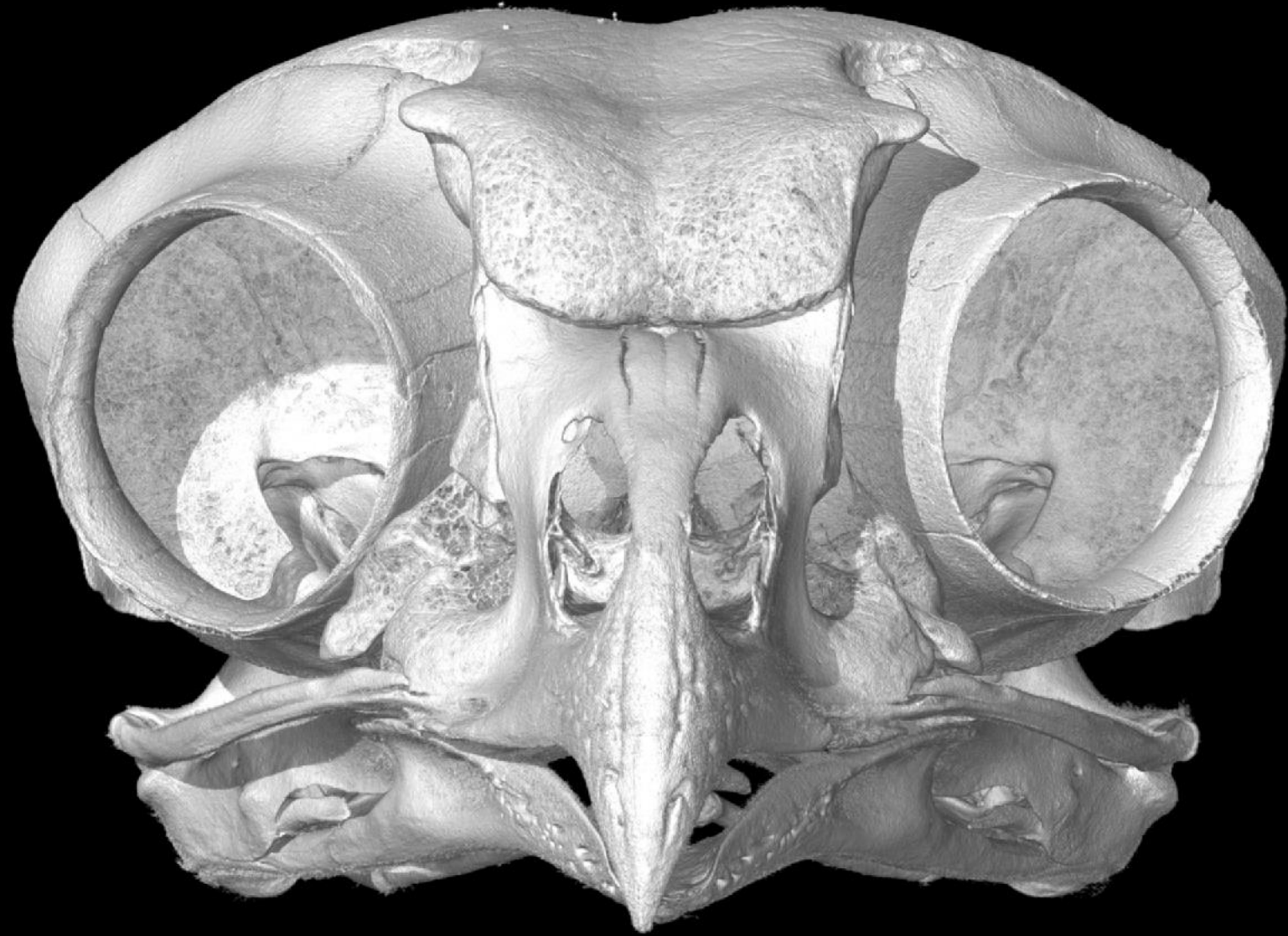
conclusion



Variations in the hypotarsus morphology of birds and their evolutionary significance

Gerald Mayr





10 mm

Original as a video

conclusion



acknowledgements

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Stöbel

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Sandra Rüdiger

references

https://www.deutschestextarchiv.de/book/view/haeckel_morphologie01_1866?p=9

<https://digital.bibliothek.uni-halle.de/hd/content/pageview/2070588>

<https://iiif.wellcomecollection.org/image/L0058417/full/full/0/default.jpg>

https://commons.wikimedia.org/wiki/File:Red_wine_cap.jpg

<https://www.biodiversitylibrary.org/item/262989#page/9/mode/1up>

<https://www.biodiversitylibrary.org/item/111925#page/463/mode/1up>

<https://www.biodiversitylibrary.org/item/111925#page/463/mode/1up>

<https://journals.plos.org/plosbiology/article/figure?id=10.1371/journal.pbio.1001466.g002>

<https://docplayer.org/115814304-Hans-bub-zur-vollendung-des-65-lebensjahres.html>

https://www.mexicolore.co.uk/images-9/914_03_2.jpg

https://en.wikipedia.org/wiki/Cotinga#/media/File:Cotinga_cayana-20090124.jpg

https://en.wikipedia.org/wiki/Bird_collections#/media/File:Ornithological_collection_at_the_Museum_of_Comparative_Zoology_-_journal.pbio.1001466.g002.png

<https://i.redd.it/awp5n4dkxae61.jpg>

<https://www.google.com/search?q=haeckel+kunstformen+plate+31+cystoidea&tbm=isch&client=opera&hs=Y1P&hl=de&sa=X&ved=2ahUKewjHseGXzJ74AhUPmhoKHTu-CcYQBxoECAEQNw&biw=1007&bih=691#imgrc=bEkITnjCRbV1cM>

<https://www.mexicolore.co.uk/aztecs/home/did-the-maya-and-aztecs-take-feathers-for-headaddresses-from-birds-other-than-quetzals-1>

<https://docplayer.org/115814304-Hans-bub-zur-vollendung-des-65-lebensjahres.html>

<https://beatymuseum.ubc.ca/research-2/collections/cowan-tetrapod-collection/working-with-birds/> (This reference was added after the talk, as I discussed on the topic with Ildiko Szabo, look especially in Part 11)

references

(2011). "Robert Allen Norris Remembered." *Southeastern Naturalist* 10(4): 776-776, 771.

Bub, Hans, ed. *Kennzeichen und Mauser europäischer Singvögel: Allgemeiner Teil*. Vol. 1. A. Ziemsen, 1985.

Carrillo-Ortiz, J., et al. (2021). "A revision of bird skin preparation aimed at improving the scientific value of ornithological collections." *Avian Biology Research* 14(2): 48-54.

Chapin, James Paul, 1889-1964. *The preparation of birds for study : instructions for the proper preparation of bird skins and skeletons for study and future mounting*. (Guide leaflet, no. 58)

Deterville, J.-F. o.-P., 1766-1842 (1803). "Nouveau dictionnaire d'histoire naturelle appliquée aux arts : principalement à l'agriculture et à l'économie rurale et domestique."

Ikram, S. (2015). *Divine creatures: animal mummies in ancient Egypt*, the American University in Cairo press.

Ikram, S. (2020). "Animal mummies in Ancient Egypt and South America." *The handbook of mummy studies: new frontiers in scientific and cultural perspectives*: 1-24.

Mayr, G. (2016). "Variations in the hypotarsus morphology of birds and their evolutionary significance." *Acta Zoologica* 97(2): 196-210.

Schulze-Hagen, K., et al. (2003). "Avian taxidermy in Europe from the Middle Ages to the Renaissance." *Journal für Ornithologie* 144(4): 459-478.

references

- Winker, K. (2000). "Obtaining, Preserving, and Preparing Bird Specimens." *Journal of Field Ornithology* 71(2): 250-297.
- O'Connor, J. K., et al. (2014). "A confuciusornithiform (Aves, Pygostylia)-like tarsometatarsus from the Early Cretaceous of Siberia and a discussion of the evolution of avian hind limb musculature." *Journal of Vertebrate Paleontology* 34(3): 647-656.
- Piechocki, R. (1967). *Makroskopische Präparationstechnik: Teil 1: Wirbeltiere*, Akademische Verlagsgesellschaft.

