



# VALORISATION OF CITIZEN SCIENCES

- FROM OBSERVATION TO PUBLICATION -

Anthonie Hellemond  
*(President Palaeontologica Belgica).*

3<sup>e</sup> Network day for *Citizen Science (SciVil)* – BMCC Bruges (15<sup>th</sup> November 2022)



PALAEONTOLOGICA  
BELGICA



# NEW TERM OLD CONCEPT

The term 'Citizen Science' has become part of our scientific and public lexicon in recent years. The content, however, encompasses an old a concept that has been part of scientific research for decades

Indeed, it is a concept that was already practised hundreds of years ago but for a very long time no suitable comprehensive definition was actually formulated for it. We can easily say that citizen science encompasses a broad spectrum of participation in scientific research that is conducted, supported, or utilised by citizens with no academic background or recognised training within the relevant research domain.

Yet, the absence of a suitable definition is precisely the crux of one of the problems we face today in Belgian research. Let us for a moment consider the problematic relationship between citizen science and academic - professional scientific research from a historical point of view.



PARTICIPATION



EMPIRICAL RESEARCH  
SCIENTIFIC METHOD



NO SPECIFIC SCIENTIFIC  
BACKGROUND



VOLUNTARILY (NON FUNDED)





# PALEONTOLOGY

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# MARY ANNING

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1799 °

1847 †

English fossil collector and self-taught palaeontologist, known for discoveries of *Ichthyosaurus* and *Plesiosaur*, among others.

## Misunderstood by the British academic elite

But in time worked her way up to as an internationally renowned expert. Although she often did not get the credit she was due, Annings's contributions earned her an honorary membership to the prestigious London geological society and other scientific organisations at the time. This was highly unusual considering women at the time were not allowed to study, vote or attend lectures. Certainly not people belonging to the working class.



# DIFFICULT RELATIONSHIP

## BETWEEN PROFESSIONAL AND NON-PROFESSIONAL RESEARCHERS

Collaboration between professional and non-professional researchers was not always easy. Practising science was often seen as an exclusive privilege for white men who could free up time and money or who received support for this from political and industrial investors or family circles. This made science an elitist and exclusive activity for a long time



### (HISTORICAL) STUMBLING BLOCKS IN COOPERATION



Unknown, Not Promoted



Sexual Discrimination



Ivory Tower Mentality



Cognitive Bias



Time Consuming



Administrative Problems



Not Prestigious



Little Funding



Losing Original Contributions



# LOUIS DE PAUW AWARD

- ◆ Awarded annually since 2021
- ◆ Citizen scientist in palaeontology
- ◆ Appreciation for research
- ◆ Motivation to the community



## BELGIUM'S FIRST CITIZEN SCIENCE AWARD

The Louis De Pauw award is the first and only prize awarded within Belgian science to a citizen scientist whose contributions to the field have led to an expansion of our knowledge. It is a celebration of the merits of the citizen scientist(s) in the field, the creation, preparation, conservation and study of collections, and the results published on this subject over many years.



**1 out of 28**

The 'Louis De Pauw Award' is currently the only award of its kind presented amongst 28 other fields of research where citizen scientists fully participate from observation to publication



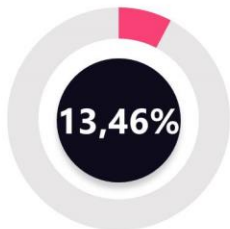


# CITIZEN SCIENCE ANNO 2022

**2.000.000 €**

2 Project Calls  
Flemish government

**△ 2017-2019**



**14 of the 104 submitted projects  
received funding**

Apart from the Flemish government making the most meaningful investments in citizen science in recent years, it is difficult to get a picture of the grand total of investments in citizen science on a federal, regional and municipal level.



-Oog voor Diabetes -  
Retinal analysis  
(2017)



- CurieuzeNeuzen  
Duikt Onder –  
Climate adaptation  
(2019)



-SPINCITY-  
Spiders as natural  
barometers in cities  
(2017)



-Airbezen@School-  
Measuring air quality  
via strawberry plants  
(2017)



- B&Bee -  
Bee friendly garden  
(2019)



- AstroSounds -  
Listening to the Stars  
(2019)



| 6



# PARTICIPATION LEVEL

## FLEMISCH CITIZEN SCIENCE PROJECTS



2017-2018



2019-2020

2017-2018

1. AIRbezen@School
2. SPIN-CITY
3. Insecten: vriend of vijand?
4. VLINDER
5. Vespa-watch
6. Knappe k(n)oppen
7. Oog voor Diabetes
8. Burgerpraat!
9. Mijn Tuinlab, onderzoek in de achtertuin
10. HASSELair
11. Groene pioniers
12. MamaMito
13. Een fiets-STEM voor scholen!

2019-2020

1. Waar gingen de Antwerpenaren aan dood?
2. CurieuzeNeuzen duikt onder
3. Bugs2therescue
4. Snappdenatuur
5. B&Bee
6. AstroSounds
7. Stiemerlab





# PERSISTENT ONE-SIDED VIEWS AND BIASES ON CITIZEN SCIENCE

## PRO

- ◆ CHEAP
- ◆ FAST WAY OF OBTAINING BIG DATA
- ◆ FUNDING POSSIBILITIES

## CONTRA

- ◆ EXTRA ADMINISTRATION
- ◆ GUIDANCE REQUIRES EXTRA WORK
- ◆ LOSING CONTROL / SHARING CREDITS







# BENEFITS IN COOPERATION

(FOR THE CITIZEN SCIENTIST)

- ◆ SENSE OF APPRECIATION, RESPECTFUL COOPERATION

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- ◆ ACCESS TO DEDICATED RESEARCH FACILITIES

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- ◆ ACKNOWLEDGEMENT OF SCIENTIFIC CONTRIBUTIONS

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- ◆ SOURCE OF MOTIVATION FOR OTHER CITIZEN SCIENTISTS

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- ◆ INCENTIVE TO CONTINUE RESEARCH

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- ◆ BROADENING NETWORKING OPPORTUNITIES

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- ◆ INCLUSIVENESS, NO IVORY TOWER ISSUES





# BENEFITS IN COOPERATION

(FOR THE PROFESSIONAL RESEARCHER)

- ◆ LARGER DATASETS -> CLEARER TRENDS -> MORE MEANINGFUL CONCLUSIONS

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- ◆ RESEARCH ENRICHMENT

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- ◆ INEXPENSIVE WAY TO EXPAND RESEARCH

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- ◆ NETWORKING OPPORTUNITIES WITH OTHER CITIZEN SCIENTISTS AND CITIZEN SCIENCE ORGANISATIONS

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- ◆ POTENTIAL (ADDITIONAL) FUNDING OPPORTUNITIES

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- ◆ FACILITATION OF OUTREACH



# PARTICIPATION LEVELS

## SCIENTIFIC METHOD



OBSERVATION



DOCUMENTING / RECORDING / COLLECTING



LITERATURE REVIEW / PRELIMINARY STUDY



SETTING UP AN EXPERIMENT



EMPIRICAL RESEARCH / REPRODUCTION RESULTS



DATA ANALYSIS / PROCESSING



FORMULATING HYPOTHESES / CONCLUSIONS



PUBLISHING RESEARCH



COMMUNICATE / OUTREACH

BEGINNER

ADVANCED

EXPERT





# FULL PARTICIPATION



Within science, not every field lends itself equally well to the full input of citizen scientists. Some research areas require large investments in equipment, infrastructure and consumables. The following (non exhaustive) list summarises the main fields in which citizen scientists are active from observation to publication

## EARTH SCIENCES

GEOLOGY, PALEONTOLOGY, MINERALOGY, SOIL SCIENCE, CAVING

## ASTRONOMY

ASTROPHOTOGRAPHY, RADIO ASTRONOMY, SPECTROSCOPY, METEOR DETECTION

## BIOLOGY

ENTOMOLOGY, BOTANY, DENDROLOGY, MALACOLOGY, ZOÖLOGY  
ECOLOGY, MYCOLOGY ORNITHOLOGIIY ICHTHYOLOGY, ORCHIDEOLOGY

## ARCHEOLOGY & HISTORY

ARCHEOLOGY, HISTORY, PALEOGRAPHY, NUMISMATICS, GASTRONOMY,  
METAL DETECTION, GENEALOGY

## CLIMATOLOGY – ENVIRONMENTAL STUDIES

METEOROLOG, ECOLOGYY



# CITIZEN SCIENCE ORGANISATIONS



## EARTH SCIENCES

Palaeontologica Belgica  
Raad voor Aardwetenschappen  
Mineralogische Kring A'pen  
Academie voor Mineralogie  
Nautilus Gent  
Cercle Géologique Hainaut  
LITHOS  
Soil Science Society Belgium  
Belgische Vereniging voor  
Paleontologie (BVP)



## ASTRONOMY

Vereniging voor  
Sterrenkunde (VVS)  
Société Royal Belge  
D'astronomie (SRBA)  
Société Astronomique de  
Liège (SAL)  
Volkssterrenwachten MIRA,  
URANIA, BEISBROEK,  
WEGA, Astrolab IRIS  
ASTRO NAMUR  
Noorderkroon Achel



## BIOLOGY

Société Royal Belge  
d'Entomologie, Koninklijke  
Belgische Botanische  
Vereniging, L'Institut Floristique  
Belge (IFB), Cercle des  
Naturalistes Belges, Belgische  
Dendrologische Vereniging,  
Société Royale Belge de  
Malacologie, Natuurpunt,  
Marien Ecologisch Centrum,  
Natagora.



## ARCHEOLOGY

Vlaams Archeologencollectief,  
VONA, Ex-Situ, Vlaamse  
Vereniging voor Industriële  
Archeologie, Académie Royale  
d'Archéologie de Belgique  
(KAOB-ARAB); Fédération des  
Archeologues de Wallonie &  
Bruxelles, Heemkunde  
Vlaanderen, Histories, Koninklijk  
Europees Genootschap voor  
munt en penningkunde



## CLIMATOLOGY

Société Royale Belge du  
Physique du globe, Belgische  
Meteo Club belge, Werkgroep  
Meteorologie VVS, Vlaamse  
Vereniging voor Weerkunde  
(VWW)



# UNIQUE PROFILES



**FREDERIK MOLLEN (46)**

## Profession

Policy officer and spatial planning specialist at Natuurpunt

## Research domain as a citizen scientist

Fossil and recent Sharks comparative anatomy and morphology.  
Founder of Elasmobranch Research vzw.

## Publications

14 Peer Reviewed articles (10 as 1<sup>st</sup> author)  
42 popular science articles (+ conference papers)  
Reviewer for, among others, Zoological Journal - Linnean Society London

## Lectures, workshops, demos, conferences and other activities

Gives 3-4 lectures / year  
Attends 4 conferences / year  
Member of various national and international organisations



# UNIQUE PROFILES



**FELIX VERBELEN (78)**

## Profession

Retired - former Insurance executive

## Research domain as a citizen scientist

Astronomy, Radio astronomy, Meteorology, Archaeo-astronomy, Spectroscopy,  
Solar eclipses, Comet and planetary orbit calculations.

## Publications

7 Peer Reviewed articles (1 as 1<sup>st</sup> author)

30-40 popular scientific articles

2 books published at the observatory of the Czech Republic

## Lectures, workshops, demos, conferences and other activities

Dozens of lectures at home and abroad

Former director of the Volkssterrenwacht MIRA Grimbergen

Former Provincial Director VVS (Society for Astronomy)

Former Director of the Belgian Committee of Amateur Astronomers



# UNIQUE PROFILES



**JOACHIM BRESSEEL (38)**

## Profession

Teacher Animal Care- Horticultural School KTA HORTECO

## Research domain as a citizen scientist

Entemology Insect Diversity, Taxonomy, Systematics, Conservation Biology

## Publications

31 Peer Reviewed articles (including 19 as 1<sup>st</sup> author)

## Lectures, workshops, demos, conferences and other activities

Gives 3-4 lectures / year also abroad

Attends 4 congresses / year

Does education on entemology at home and abroad

Goes on fieldwork in Southeast Asia on his own budget

Regularly identifies new species

Does pro-active outreach, including with Lieven Scheire





# UNIQUE PROFILES



17



**GUIDO CUYT (78)**

## Profession

Retired - Former teacher Latin-History-French

**Research domain as a citizen scientist**  
(Roman) Archeology

## Publications

4 books on Roman Archaeology (in Belgium)  
Countless papers in Archeology magazines

## Lectures, workshops, demos, conferences and other activities

(Honorary) President - AVRA (Antwerp Association of Roman Archeology)  
External collaborator Archeology dept KU-Leuven  
Member of the Flemish archeological counsel  
Gives lectures, conferences on annual basis



# UNIQUE PROFILES



18



**LUC HERREMANS (66)**

## Profession

Transportation sector

Research domain as a citizen scientist  
METEOROLOGY – METEO STATION

## Publications

Handbook meteo station, brochures, several article for the VVW magazine

## Lectures, workshops, demos, conferences and other activities

Member of the VVW Vlaamse Vereniging voor Weerkunde  
KMI de Bilt cursus, Meteoservice Heverlee  
Education for schools and visitors





# CONCLUSIONS

# WORKING POINTS

- ◆ USE BROADER DEFINITION CITIZEN SCIENCE

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- ◆ VALORISING CITIZEN SCIENTISTS FOR THEIR RESEARCH THROUGH AWARDS

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- ◆ ALLOW PROJECT APPLICATIONS TO BE SUBMITTED BY CITIZEN SCIENTISTS

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- ◆ MORE FOCUS ON PROMOTING CITIZEN SCIENCE AMONG PROFESSIONAL ORGANISATIONS AND THROUGH ACADEMIC INSTITUTIONS

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# OPEN DISCUSSION

## QUESTIONS...

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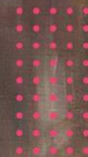
**SHOULD THE BELGIAN/FLEMISH DEFINITION OF CITIZEN SCIENCE BE RETHOUGHT (MORE INCLUSIVE)?**

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**SHOULD AWARDS FOR CITIZEN SCIENTISTS BE ORGANISED OR SUPPORTED BY DIFFERENT ACADEMIES OF SCIENCES, POLITICS, OR CITIZEN SCIENCE ORGANISATIONS?**

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**SHOULD CITIZEN SCIENTISTS BE ALLOWED TO SUBMIT PROJECT PROPOSALS TO OBTAIN FUNDING?**





# THANK YOU

 [Palaeontologica-belgica.org](http://Palaeontologica-belgica.org)

 [Palaeonologica.belgica@gmail.com](mailto:Palaeonologica.belgica@gmail.com)

 [@palaeontologica](https://twitter.com/palaeontologica)

