



CS TRACK
Investigating Citizen Science

Recommendations for Policy Makers – D3.3 [2023-01-25]

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FOCUS:

Use monitoring to identify and actively support volunteer engagement

Recommendation #1

Be aware of side effects when using SDGs as a target criterion for CS activities

Recommendation #2

POLICY RECOMMENDATION #1

Use monitoring to identify and actively support volunteer engagement

Recommendation #1

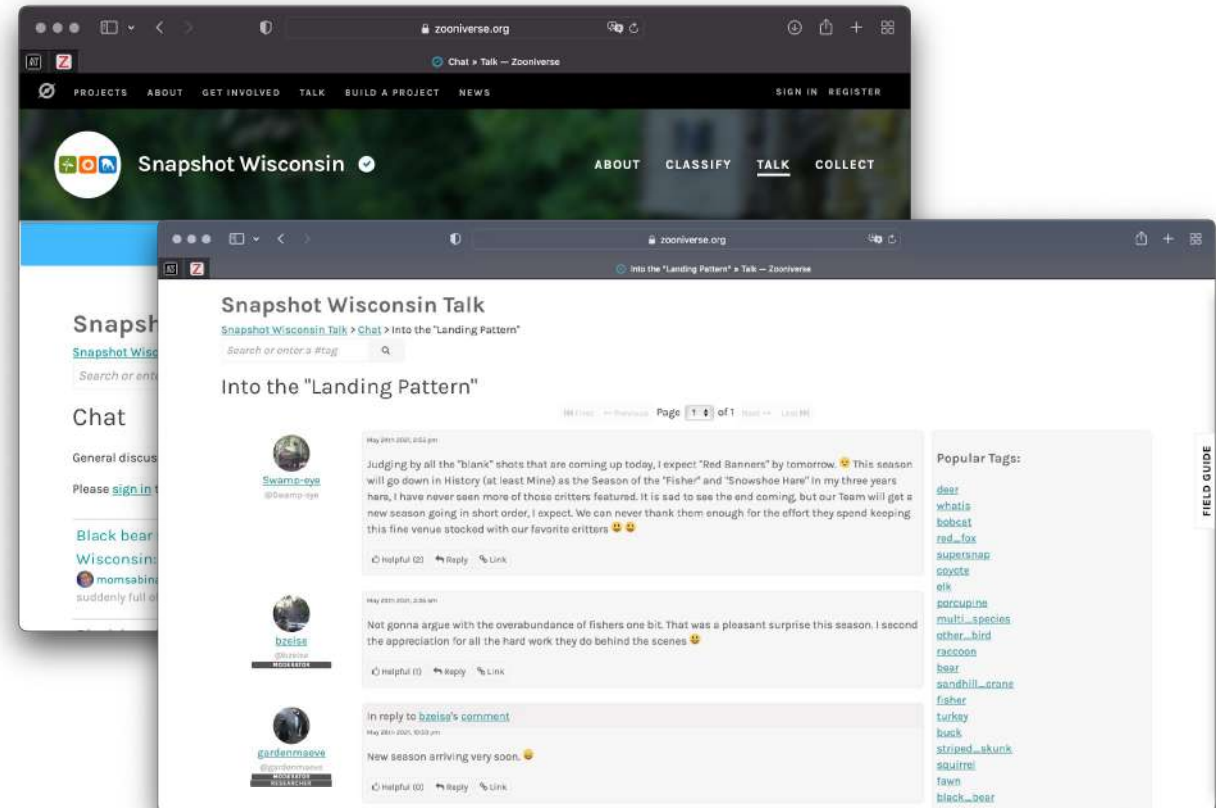
- Use **monitoring tools** to be able to provide **moderation support**
 - Positive feedback & rewards
 - Granting additional rights to engaged volunteers
- Recruit **community managers**
 - Prepare them in advance
 - Assign them to projects
 - Provide them with positive feedback and rewards (payment/other benefits)

BACKGROUND

Use monitoring to identify and actively support volunteer engagement

- Study by Krukowski et al. (2022) on whether volunteer engagement in online citizen science platforms „pays off“
- Rationale: Contributory CS projects in online platforms might be **instrumentalising** volunteers for **annotation & categorisation** tasks
- RQ: **Do volunteers actively participate in the scientific process & what benefits do they get?**

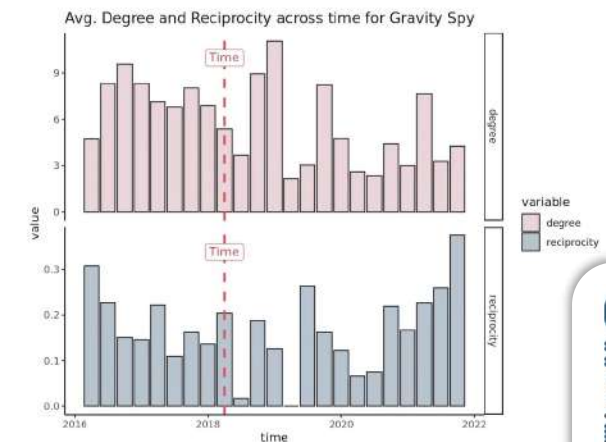
ZOONIVERSE



APPROACH

Use monitoring to identify and actively support volunteer engagement

- Approach: Creation of **time-dependent graphs of forum interactions** for sample of Zooniverse projects
- Analysis of interactions/participation over time
 - **User roles** (e.g., volunteer, moderator)
 - Participation metrics (avg. **degree, mutuality**)
 - **Prevalence** of user roles & changes
 - Individual **trajectories** and „careers“ of users

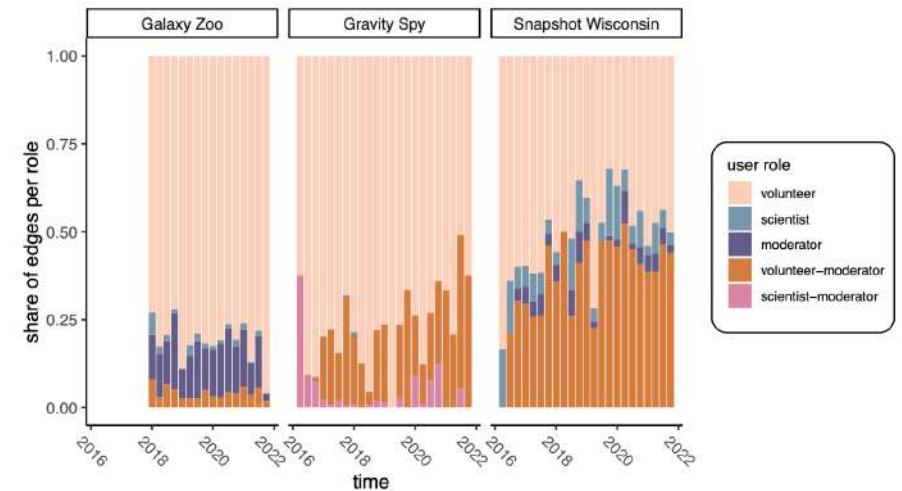
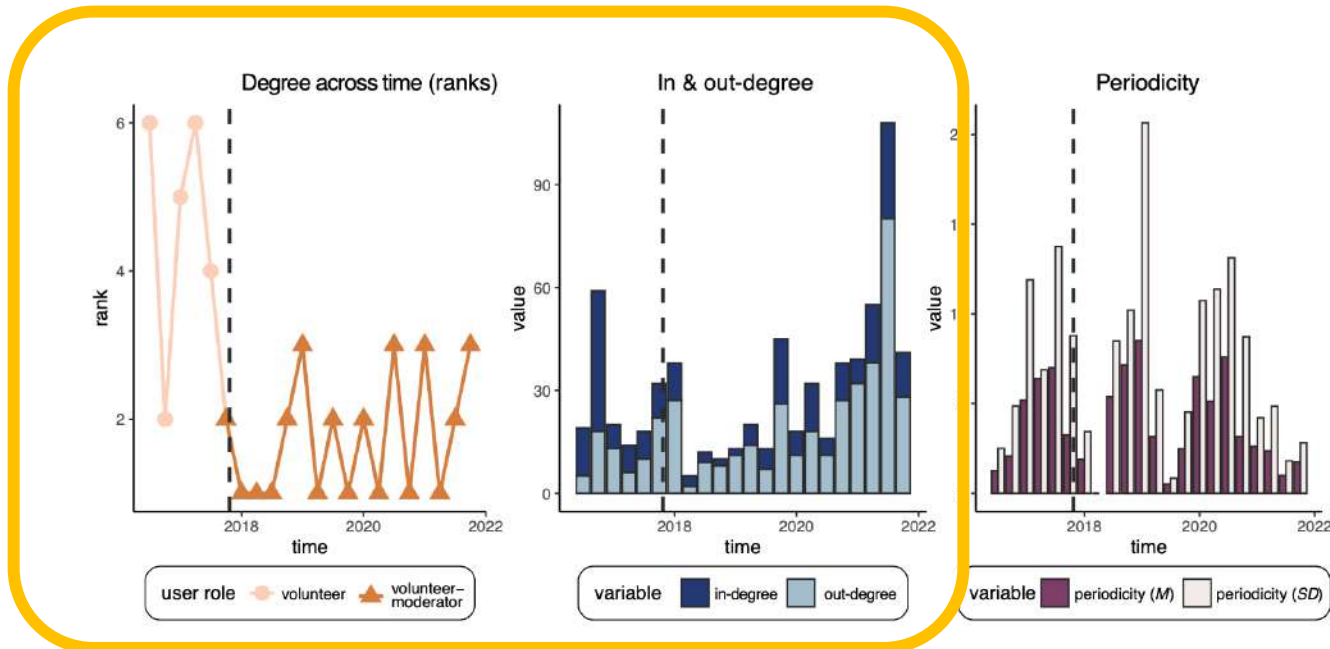
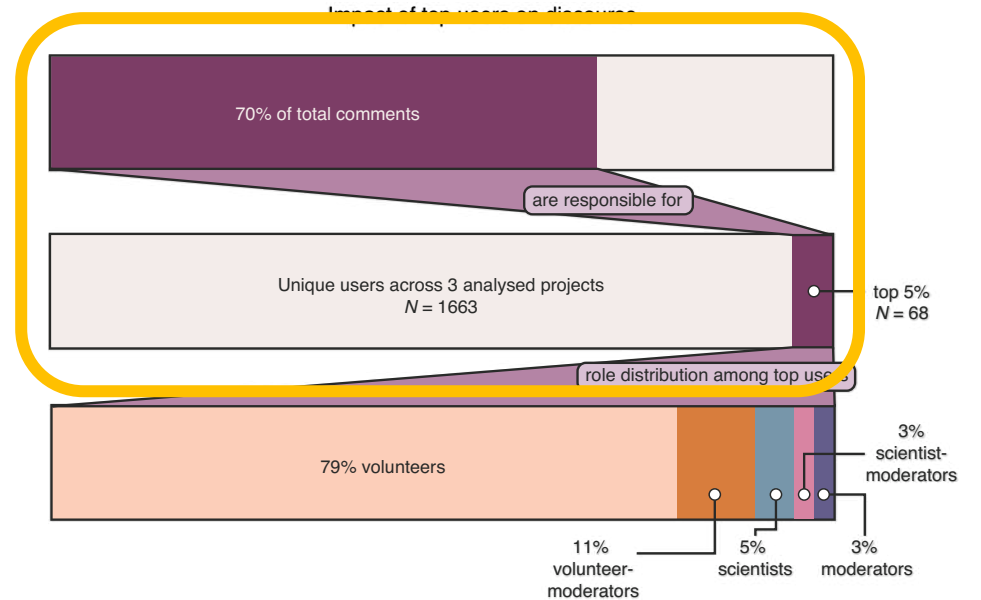


RESULTS

Use monitoring to identify and actively support volunteer engagement

Volunteers and promoted volunteers (**volunteer-moderators**) responsible for most of discourse, but only top 5%

- Increased participation by promoted **volunteer-moderators** over time -> **role changes**

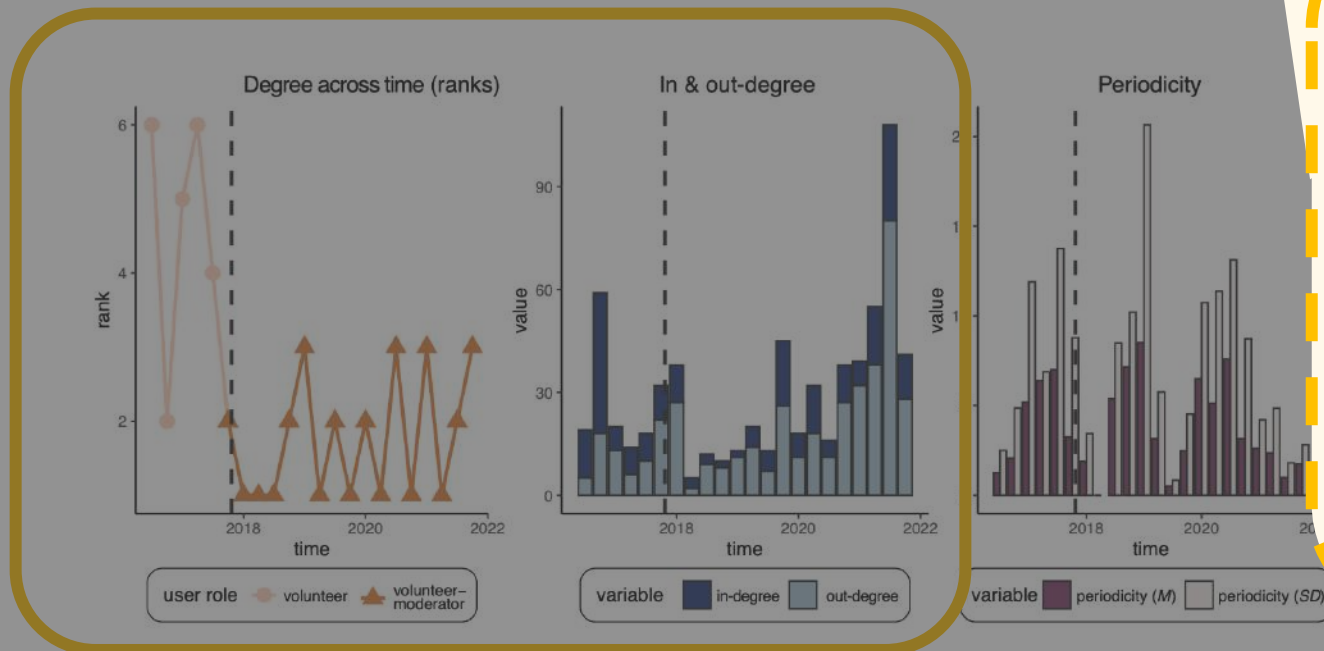


RESULTS

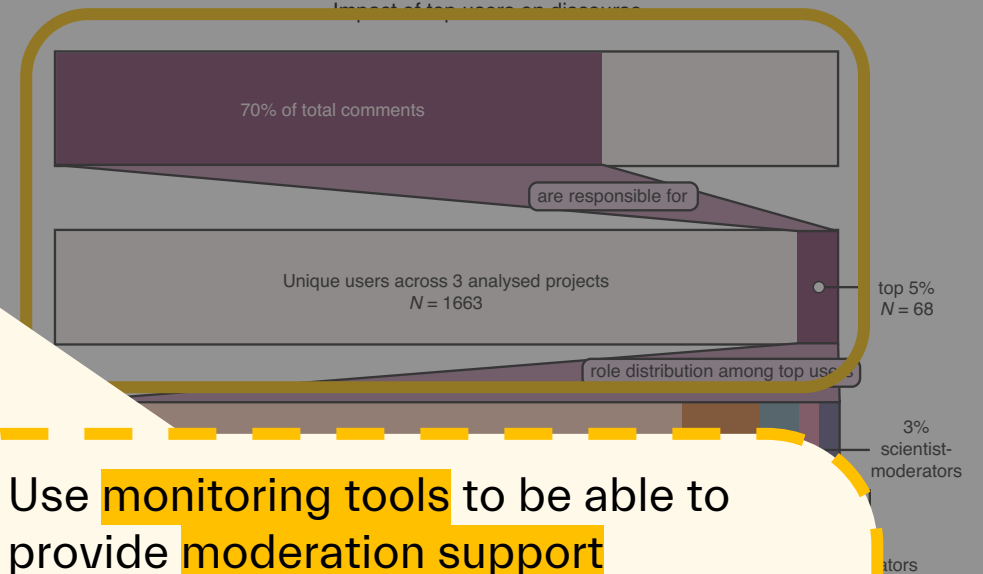
Use monitoring to identify and actively support volunteer engagement

Use monitoring to identify and actively support volunteer engagement

- Increased participation by promoted **volunteer moderators** over time -> **role changes**



- Use **monitoring tools** to be able to provide **moderation support**
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POLICY RECOMMENDATION #2

- Be aware that certain research areas might be **left behind** when focussing **too strongly** on **SDGs**
e.g.:
 - astronomy/astrophysics
 - arts & humanities
 - ornithology

Be aware of side effects when using SDGs as a target criterion for CS activities

Recommendation #2

BACKGROUND

Be aware of side effects when using SDGs as a target criterion for CS activities

- Study by Hoppe et al. (2022)
- Rationale: Analysis of project descriptions of CS projects
 - Crawling of 200+ Zooniverse projects
 - Analysis of project descriptions
 - Calculation of **similarity** (ESA) between project description and research areas (RAs), sustainable development goals (SDGs)
- RQs: **To what extent do RAs in project descriptions resonate with SDGs?**



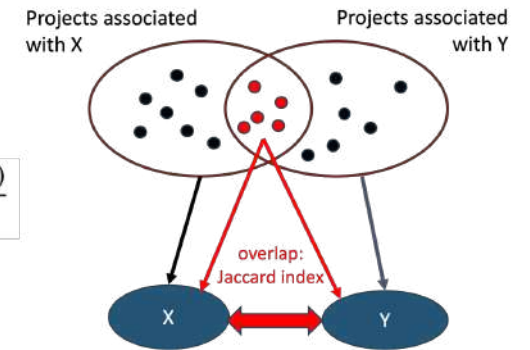
APPROACH & RESULTS

Be aware of side effects when using SDGs as a target criterion for CS activities

- Approach: Compare the resonance of RAs in project descriptions to SDGs
- Analysis of similarities with SDGs
 - Calculation of average similarity with specific and all SDGs using Jaccard-Similarity
- No surprise regarding the RAs that show high resonance with SDGs
- Only 3.9% of projects with astronomy & astrophysics resonate with SDGs
- Ornithology and Arts & Humanities score lower than “Astro”
- Orientation towards SDGs as criterion for relevance?

$$Sim(X, Y) =$$

$$\frac{\text{(Number of projects associated with X and Y)}}{\text{(Number of projects associated with X or Y)}}$$



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1		SDG #1	SDG #3	SDG #4	SDG #5	SDG #6	SDG #10	SDG #11	SDG #12	SDG #13	SDG #14	SDG #15	SDG #16	count	
2	Allergy	0	0,030303	0,012987	0	0	0,020833	0	0	0,018181	0	0	0,166667	11	0,00748229
3	Toxicology	0	0,0149254	0,012987	0	0	0,0103093	0,0133333	0	0,037037	0	0	0,166667	11	0,008053821
4	Medical Laboratory Technology	0	0,0454545	0,025974	0	0	0,021212	0	0	0,0178571	0	0	0,1621822	12	0,010957792
5	Telecommunication	0	0,0294118	0,0576316	0	0,0416667	0,0204082	0,04	0	0,0357143	0	0,0422535	0,1282051	13	0,023025990
6	Arts & Humanities Other Topics	0	0,022129	0,0921063	0	0	0,1075269	0,057895	0,0222766	0,0238933	0,027027	0,0146667	0	16	0,036587202
7	Ornithology	0	0,0410988	0,0238095	0	0	0,048505	0,037037	0	0	0,0512821	0,2121212	0,0416667	19	0,037713697
8	Astronomy & Astrophysics	0	0,0454545	0,0533333	0,037037	0	0,0421063	0,0547945	0,047619	0,0754717	0,020303	0,0426571	0,1025641	12	0,028997782
9	Sport Sciences	0	0,0285714	0,1388888	0	0	0,0851064	0,0526516	0,0217391	0,0544838	0,0277778	0,0410988	0	15	0,039117623

Research Area	Average resonance with all SDGs in %	Resonance with SDG 4 (Qual. Edu.) in %
Environmental Science & Ecology	16.1	17.8
Biodiversity & Conservation	13.5	16.2
Life Sciences & Biomedicine	11.2	20.7
Education & Ed. Research	7.9	26.5
Computer Science	1.0	5.4
Astronomy & Astrophysics	3.9	5.3
Ornithology	3.8	2.4
Arts & Humanities	3.7	9.2

APPROACH & RESULTS

Be aware of side effects when using SDGs as a target criterion for CS activities

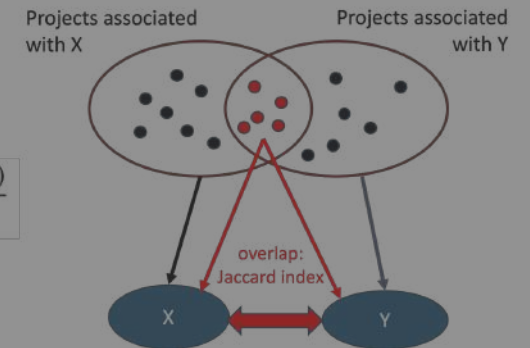
- Be aware that certain research areas might be left behind when focussing too strongly on SDGs

e.g.:

- astronomy/astrophysics
- arts & humanities
- ornithology

$$Sim(X, Y) =$$

$$\frac{(\text{Number of projects associated with X and Y})}{(\text{Number of projects associated with X or Y})}$$



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1		SDG#1	SDG#3	SDG#4	SDG#5	SDG#6	SDG#10	SDG#11	SDG#12	SDG#13	SDG#14	SDG#15	SDG#0	count	
2	Allergy	0	0,030303	0,012987	0	0	0,020833	0	0	0,018181	0	0	0,166667	11	0,00748229
3	Toxicology	0	0,0143254	0,012987	0	0	0,0103093	0,0133333	0	0,037037	0	0	0,166667	11	0,008053821
4	Medical Laboratory Technology	0	0,0484848	0,012987	0	0	0,02125	0	0	0,0178571	0	0	0,1621822	12	0,010957792
5	Telecommunication	0	0,0294118	0,0576316	0	0,0416667	0,0204082	0,04	0	0,0357143	0	0,0422535	0,1282051	13	0,023325598
6	Arts & Humanities Other Topics	0	0,028169	0,0923053	0	0	0,1075269	0,0657895	0,0222766	0,0239893	0,027027	0,0266667	0	16	0,026587202

Be aware of side effects when using SDGs as a target criterion for CS activities

- No surprise regarding the results that show high resonance with SDGs
- Only 3.9% of projects with astronomy & astrophysics resonate with SDGs
- Ornithology and Arts & Humanities score lower than "Astro"

25	Health Care	Life Sciences & Biomedicine	11.2	20.7
26	Public Health	Education & Ed. Research	4.9	16.7
27	Sustainable Development	Computer Science	1.0	5.1
28	Biomedicine	Astronomy & Astrophysics	3.9	5.3
29	Development	Ornithology	3.8	2.4
30	History & Philosophy	Arts & Humanities	3.7	9.2
31	Public Administration			
32	Behavioral Science			
33	Mathematics			
34	Literature			
35	Research Methods			
36	Healthcare			
37	Social Science			
38	Optics			
39	Biochemistry			
40	Sociology			
41	Environmental Science			
42	Education			

Recommendation #2

DISCUSSION

- Questions?
- Remarks?