

Volunteers join scientists in finding out who gets rid of cow dung

November 8 2013

With more than a billion cows around the world, an immense amount of dung is produced each day. Most of these droppings will evidently disappear, as the world is still green rather than brown. Now a team of scientists have joined forces with local volunteers to find out who decomposes the most of it in Finland, Northern Europe.

Dor beetles dominate

The largest part of a dung pat is broken down by [microbes](#) alone, or just evaporates as the pat dries out. About one-eighth (13%) is removed by small animals, mostly insects and other invertebrates.

Not all of these animals are equal: Of all the bugs making a living off the dung, large tunnelling Dor beetles in the genus *Geotrupes* removed dung twice as fast as did smaller dung-dwelling beetles and earthworms.

Climate proved to have an equally strong effect on dung disappearance as does dung-eating animals.

Citizen scientists did the job

Comparing the impact of specific animal groups with that of climate was possible as the scientists targeted some 80 sites across a whole country. At each site, a set of cages was used to keep out certain dung-eating invertebrates from selected cow pats but not from other pats.

Clearly, no single team of professional scientists could work at this scale. To achieve it, the team used the approach of citizen science.

"Citizen science is about having non-scientists joining in the research process. Together we can then form the big picture" explains Riikka Kaartinen, who kept the whole project together.

Strength in numbers

"Our strength comes from our numbers", says Bess Hardwick, who taught the participants how to do the experiment, and answered their questions throughout the summer. "A lot of changes in nature will only be noticed if followed by a large number of eyes – like if some animals change their ranges southwards or northwards, or if they get rarer."

"What we did was to take citizen science one step further, by moving from 'just' observing nature to manipulating something, to excluding certain groups of [animals](#)" says Tomas Roslin, the leader of the research group. "Changing something and looking at the consequences, that is the gist of experimental science."

"The thing to learn here is that we can do so much more if we just think outside of the scientists' box", adds Tomas. "In [citizen science](#), our own imagination is really the hardest limit to what we can do together."

Provided by University of Helsinki

Citation: Volunteers join scientists in finding out who gets rid of cow dung (2013, November 8) retrieved 26 June 2024 from <https://phys.org/news/2013-11-volunteers-scientists-cow-dung.html>

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