

#### Working with citizens to monitor tick-associated risk

Jonas Durand, Irène Carravieri, Clémence Leyat, Costanza Puppo, Julien Marchand, Cyril Galley, Sandrine Capizzi, Gwenaël Vourc'h, Marie Préau, Pascale Frey-Klett, et al.

#### ▶ To cite this version:

Jonas Durand, Irène Carravieri, Clémence Leyat, Costanza Puppo, Julien Marchand, et al.. Working with citizens to monitor tick-associated risk: Lessons learned from the CiTIQUE project. EWDA Network Meeting 2021, European Wildlife Disease Association, Aug 2021, Cuenca, Spain. hal-03341926

#### HAL Id: hal-03341926 https://hal.inrae.fr/hal-03341926

Submitted on 13 Sep 2021

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers. L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NonCommercial - NoDerivatives 4.0 International License

EWDA Network Meeting 2021





# Working with citizens to monitor tick-associated risk

#### Lessons learned from the CiTIQUE project

Jonas Durand, Irene Carravieri, Clémence Leyat, Costanza Puppo, Julien Marchand, Cyril Galley, Sandrine Capizzi, Gwenaël Vourc'h, Marie Préau, Pascale Frey-Klett, Annick Brun-Jacob





## Poll questions on stereotypes about ticks

- Do ticks fall from trees to bite you?
- 1. Yes 2. No 3. It's better than trees falling on me!
- Should you care about ticks when you're taking care of your garden?
- 1. Yes 2. No 3. I can only dream to have a garden
- It's dangerous to let the mouthparts of the ticks in your skin after removing its body?
- 1. Yes, because it can still infect you with a pathogen 2. No, because the pathogens are localized in its body 3. Yes, because the body will regrow from the mouth parts



## Ticks and tick-borne diseases

- In Europe, ticks are the most important vector for vector-borne diseases for both human and animal health.
- Tick-borne diseases can be caused by bacteria (e.g. Lyme disease), parasites (e.g. babesiosis), viruses (e.g. tick-borne encephalitis).
- There are around 900 different species of ticks in the world, adapted to different ecosystems.











## Ticks and citizen science



 Importance of Tick-borne Diseases (TBDs) for public health and society.

TBDs are a social problem that calls for the implication of citizens.

• Citizen science projects on ticks are increasing in the world.



## CiTIQUE: a citizen science program





# CiTIQUE: How can citizens participate?

## Different levels of citizen engagement





## Level 1 & 2: results from 2020

#### 18 306 human and 5 300 animal tick bite reports in 2020



Location of tick bite reports





Percentage of ticks infected by a pathogen





## Level 1 & 2: Importance of citizens' contribution

- More than 2000 emails in two years, and 1-2 phone calls per day during peak tick activity.
- Examples of messages:

Tick probably brought back by my cat who then slept against me.







## Level 3: Tous Chercheurs internships

- Tous Chercheurs = Everyone's a researcher
- Tutored by scientists
- Example of a 2-days program:

#### **First Day**

#### **Second Day**

Discovery and discussion of the scientific method, ticks and tick-borne pathogens ecologyCo-construction of a research question, hypothesis

2<sup>nd</sup> experiment: PCR on tick DNA to look for Borrelia infection

**1st experiment:** morphological identification of ticks

Analysis and discussion of the results

## Level 3: Tous Chercheurs internships

- Started in 2019
- Are pet-biting ticks representing a risk for human health?
- 19 internships (people from 11 to 73 yo)
- 502 analyzed ticks







Percentage of Borrelia burgdorferi sensu lato infected ticks











## Level 3: Impact of Tous Chercheurs internships

- Humanities and social science study by Leyat C., Puppo C. and Préau M. (2021)
- Impact on prevention: citizens more aware of the risks, more confident to prevent tick bites and to share their knowledge with others.
- Impact on science representation: renewal of confidence in scientists, new (or confirmed) attraction for science.
- Impact on stereotypes: 3 main stereotypes have been the most cited.

## Level 3: Impact of Tous Chercheurs internships

- Impact on stereotypes: Results from the polls
- Ticks do not fall from the trees to bite you
- Ticks can be found in private gardens







## How to make it work?



### **CiTIQUE: a small team**



Julien Marchand Cyril Galley and Irene Carravieri









Annick Brun-Jacob and Sandrine Capizzi Enseignants-chercheurs





Tom Beyeart

Jonas DURAND

Gwenaël Vourc'h



tous

Pascale Frey-Klett

15



## CiTIQUE: a multi-actors program focused on research





## Facilitators with different roles

- Linking researchers and users
- Fostering and maintaining engagement in the program
- Program's ambassadors
- Science communication
- Establishment of structures for participatory research (physical or virtual structures)



## Take-home messages

- Interaction with citizens is important: they do not have to only be data providers.
- Proposing different level of engagement for citizens.
- It is possible to make scientist-grade research with citizens in an open lab.
- You cannot do everything alone! Facilitators are important.



## Acknowledgements

- All the citizens participating in CiTIQUE
- EWDA Network Meeting organizers
- Our financers:





Fonds Européen de Développement Régio



orbre









### Thank you for your attention!



## Bonus : diapos non utilisées



## What is a classical citizen science program

Scientists ask a question

Citizens help as data gatherer

Scientists analyze the data

Scientists find the answer



Contributory citizen science



## CiTIQUE: a citizen science program with a participatory approach

Scientists and citizen co-construct a question

Citizens help as data gatherer

Scientists and citizens Scientists and citizens analyze the data find the answer

