La santé des abeilles

Apport de la recherche en évaluation des risques

9 décembre 2019

Espace du Centenaire
Maison de la RATP,
189, rue de Bercy - 75012 Paris
EU Bee Partnership
CONTEXTE

- Decline in biodiversity throughout Europe
- Beekeepers and their associations require information to present their concerns to authorities, influence decision-making, and seek for references on their practices and production
- EU institutions (e.g. EFSA) require bee data for their activities
- Launch of the **EU Bee Platform in 2017**:
  - Objective: improve data collection, management, sharing and communications to achieve a holistic approach to the assessment of bee health in Europe and beyond
SOURCES OF BEE-RELATED DATA

- EU projects: datasets from PoshBee, Insignia, B-Good, STEP + national projects + COLOSS + Epilobee
- Smart bee hives - sensors
- Beekeeping management apps/monitoring initiatives
- Biodiversity of bees and breeding
- DARs, and RARs
- Weather, Soil occupation, etc.
- Market data for bee products
EU Bee Partnership

During the first 12 months, the EUBP focus on data standardisation, collection, processing and communication, using a ‘Proof of Concept’ (PoC) approach.

2 PoCs on the way:

**BeeXML** - standardisation of bee data
**The Bee Hub** - data collection, management, sharing and communication

**Funding:**

Short-term: support the proposed ‘proof of concept’ on data sharing through in-kind contribution by stakeholders
Long-term: to allow the EU Bee Partnership to sustainably address data sharing for the benefit of bee health.
BIG DATA

• Big data enables better more robust analytics
  • Quality, Quantity and Relevance all matter when it comes to data
  • Breadth and Consistency also matter
• What matters most is the free exchange of data, the ability to put relevant anonymized data together, and merge it with secondary data (weather, crop outcomes, etc) for deep analysis
• Can also allow for better reporting for policy makers and governmental decision making
BEEXML

The Promise of Standardized Data

Proof of Concept (PoC) for a standardisation of bee data
BEEXML

Apimondia Working Group #15 (AWG15)
Standardization of data on bees and beekeeping

Robert Brodshneider, Ph.D
Joseph Cazier, Ph.D (Presenting) and his team
Walter Haefeker
Peter Neumann, Ph.D
Marten Schoonman
Noa Simon Delso, Ph.D DVM
James T. Wilkes, Ph.D
Pim Van Gennip
BEEXML

- To promote standardized ways for exchange of data in all systems tracking bees and beekeepers.

- Make all systems open source to allow community to understand and get comfortable with what is being processed.
DATA SHARING RISKS AND REWARDS
By: Joseph Cazier, Walter Haefeker, Edgar Hassler
For Hobbyist Beekeepers.
Introduction In our September Bee Culture article, “BeeXML Part I: The Power of Big Data and Analytics,” we discussed how...
READ MORE

BXXML PART 2 ACHIEVING THE GOAL OF STANDARDIZED DATA
By Joseph Cazier, Walter Haefeker & Edgar Hassler
In Search Of The Genius Hive
Last month, in the October issue of Bee Culture, our article “BeeXML Part I – ...
READ MORE

BXXML PART 1 THE POWER OF BIG DATA & ANALYTICS
By Joseph Cazier & Walter Haefeker
Enough Data To Build A True Genius Hive.
Introduction In previous articles in this series, such as “Peering Into the Future: The Path to...
READ MORE
Common Language and Standard
DATA TAXONOMY
BEEXML = Common Language and Standard

- Obviously the first agreement we have implicitly made is that the exported data would be provided in **XML format**
- To be **universally understandable**, the proposal for the standard would use **English** element names for the minimum data set
- Optimal minimal set of data:
  - hive data require a **hive ID**
  - **location**
  - **date and time of the observation**
  - **source of the data**
STATE OF THE ART

APIMONDIA MONTRÉAL (Sept 2019)

meeting of the Apimondia Working Group #15 (AWG15) - Standardization of data on bees and beekeeping. STEPS:

1. create a minimal BeeXML dataset
2. Identification of commonalities in databases, e.g. Date, Hive ID, Apiary ID, Observer, Recorder
3. Agree on definitions: e.g. what is a colony?

NEXT MEETING - Next week in Munich!!
THE BEE HUB

Proof of Concept (PoC) for an integrated big data platform on pollinators
THE BEE HUB
Initiative of BEELIFE European Beekeeping Coordination - www.bee-life.eu

Noa Simon Delso
Data interpretation
Data gathering

Gregor Susanj
Bee Hub architect and developer

Andrés Salazar
Data communication and accessibility
THE BEE HUB

European (even worldwide) platform that integrates any relevant data linked to pollinators which specialises in bees.

A user-friendly and accessible platform to monitor the status of pollinators in real-time.
Rationale and objectives

- Useful and effective **tool** in **data gathering/sharing/processing/communication**
- Its focus relies on a non-profit, open, accessible scheme
- **Collaborative tool** in which beekeepers, monitoring device producers, institutions and/or research centres see a new level of cooperation
- Interdisciplinary approach, reliable and objective
- Starts simple and in the future it aims to integrate any bee-related data
- End users:
  - Field practitioners: beekeepers, veterinarians or naturalists.
  - Researchers
  - General public
  - Policy makers
  - Industry
Data integration
PoC integrates:

- Two initial sources from beehive digital monitoring (LIVE DATA)
  - Data from IoBee field tests (BE, FR, IT, RO, ES, SE) - Arnia
  - Data from CARI and Danish beekeepers (BE, DK, SE, FI) - CAPAZ
- Two other sources of data (STATIC DATA)
  - COLOSS data - Belgium
  - varroa counts - bienengesundheit.at

Factors affecting bee health and interesting to be integrated. Source: Simon Delso 2017
Privacy and data management

• Not interested in personal data of the data owners
• A tool of integration and visualization of bee related data, but does not own the data itself
  • Data owners decide if they want to share the data or when to share the data
  • Data owners are informed about what is done with their data
  • Data owners can provide feedback anytime on the use of their data by the Bee Hub
• Data could be available to researchers, governments and commercial organization under a common license agreement, with knowledge sharing back to the bee community
CHALLENGES AND OPPORTUNITIES

Opportunities

• Analysis and reporting of data for better decision making
• Development of the Genius Hive
• All can learn from the anonymized data
• Efficiency in data sharing

Challenges

• Commercial incentives are to own the data, likely leading to near monopoly control if one group owned all the data (e.g. Google)
• Agreement on that standard, and what is important to collect
• Lack of APIs development
• Privacy Issues
Following steps

Guide to Technology Readiness Levels for the NDA Estate and its Supply Chain
THANK YOU FOR YOUR ATTENTION

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THE BEE HUB - Noa Simon Delso (simon@bee-life.eu), BeeLife (info@bee-life.eu)