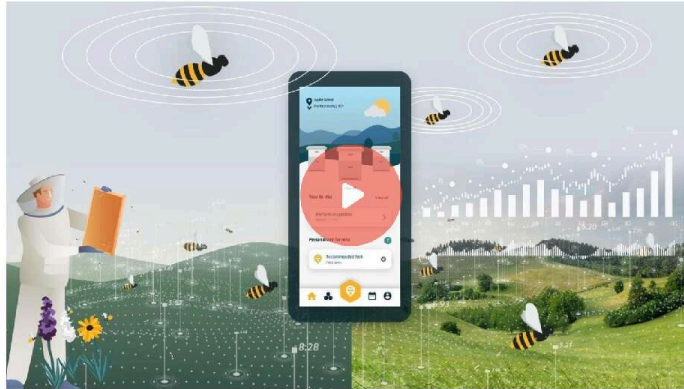


## Bees as Biosensors to Track Biodiversity



hivetracks.com | Creston, NC

Technology | B2B | Agriculture & AgTech | Science & R&D

### Highlights

- 1 Successfully closed and oversubscribed \$500k pre-seed round in 2022, raising \$635k.
- 2 20,000+ beekeeper community with 225,000+ tracked hives since 2010
- 3 New B2C beekeeper app to be launched in 2023
- 4 \$250k+ in government contracts since 2021
- 5 1000+ app users and 4+ B2G customers

### Our Team



**Max Rünzel** CEO & Co-Founder

Max is CEO and Co-Founder of HiveTracks and an expert on digitalization and empowerment of smallholder producers. He formerly worked at the FAO, the Food and Agriculture Organization of the United Nations.

75% of the food we produce depends upon natural pollinators like bees. Keeping bees healthy in healthy ecosystems is essential to our planet and a key driver to making the world more resilient in the face of ever more adverse climatic events.



**James Wilkes** Founder and CBO

James is a professor of computer science, experienced beekeeper and local food producer. He helped pioneer data-driven research in the bee space in the U.S. by founding the first beekeeping app used by thousands of beekeepers worldwide.



**Laura Dye** COO & Co-Founder

Laura is a focused, strategic, and entrepreneurial leader with a proven track record in top sales achievement. She's worked with companies in several industries to identify and quantify the value of implementing new technology solutions.



**John Cornett** CTO

John is a senior software developer and cloud architect with 20+ years of industry experience. His forte is building robust software architectures on firm foundations to function at scale.

### Pitch

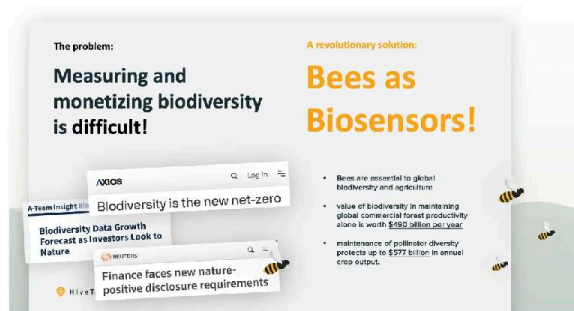




HiveTracks creates data-driven innovation to solve some of the biggest problems of our time — from sustaining biodiversity to global food-stability.

Today, the lack of data poses the biggest roadblock in creating lasting positive change for companies and governments willing to tackle the loss of biodiversity and improving food stability. Because how can we change what we cannot measure?

Measuring biodiversity is almost impossible to do at scale because it is hardware intensive, requires manual surveys (*like people in white lab coats making lists of how many beetles they saw!*) and, thus, super expensive. Meanwhile, Environmental, Social and Governance (ESG) reporting is starting to incorporate companies' biodiversity impact as global food chains are under pressure. There is an immense need to get biodiversity data at scale.



Bees as Biosensors? Yes. Deeply connected to their ecosystems, bees are knowledgeable biosensors measuring the health of the environment and biodiversity in the 6,900+ acres (2,800+ hectares) every single bee forages. They detect environmental and climate impacts earlier than we can and behave and respond to it immediately. What if we could access their intelligence?

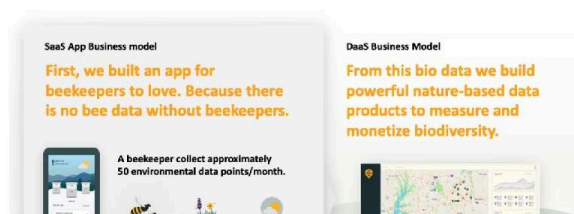
#### Our Surprising Solution:



Many insects are biosensors, but honey bees have a deeper relationship and interaction with humans—beekeepers—with whom they can share their valuable environmental intelligence. Beekeepers know if the bees aren't healthy and their frequent hive inspections reveal approximately 50 data points with each record. So HiveTracks empowers both the bees and their keepers with technology-powered products to crowd-source environmental data to create a planet-positive impact.

The health and behavior of bees, their rate of pollination and productivity, together with weather data and local flora, allows us to evaluate local biodiversity, climate impacts, and pollination efficiency at a ground-truthed, highly granular level. Our beekeepers around the world spin a tightly-woven community of nature experts highly sensitive to their bees' behavioral patterns. They are our companions.

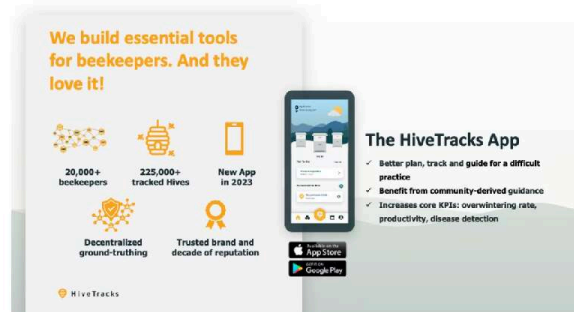
#### Our Business Model:





The HiveTracks app manages and optimizes tasks for beekeepers worldwide on the basis of data-driven best practices derived from the community. We call this "community intelligence," and believe it is key because no one knows bees better than their keepers. Communitizing their experience improves bee health, promotes better beekeeping, and drives everything a beekeeper loves:

- ✓ Increased honey harvests
- ✓ Increased overwintering rates
- ✓ Detecting diseases earlier
- ✓ Learning from the community of beekeepers



But while we serve our passionate community with an essential tool, the app automates the community-sourcing of vital environmental intelligence: bee data. Knowing the health of hives locally and globally, knowing what blooms when and where, and being able to relate these patterns to other climate factors unlocks a unique data set simply impossible to unearth otherwise.

Our app is available on both app stores as a SaaS subscription and is a gateway to building a sustainable community of beekeepers unlocking local environmental intelligence globally.

The community-sourced biodata together with our science-led proprietary data models provide a groundbreaking way to monitor, predict and certify valuable data-driven solutions. It is possible to:

- ✓ Monitor Biodiversity - from locally to globally (yes!)
- ✓ Predict growth phases for pollination-dependent crops
- ✓ Authenticate origin of honey
- ✓ Develop at-scale environmental monitoring

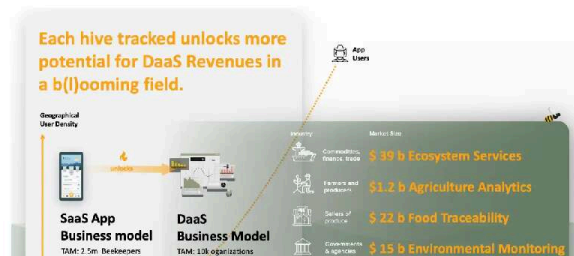
With 225,000+ hives tracked to date, HiveTracks bees have covered over 1,500+ million acres (600+ million hectares) - *that's more than the agricultural area of the US and more than twice the area of Europe's farmland!*

This proves that sourcing and monitoring environmental data from bees is scalable. The commercial applications of this are powerful:



Using this "environmental intelligence," we bring to life impactful paid solutions for governments, agriculture and for organizations wishing to monitor their local biodiversity impact. To date, we have secured \$250k in government contracts.

The Opportunity is BIG:



Don't worry, we're not only innovative, but also smart (as in Professor-kind of smart):

**Our innovation is driven by our own pioneering scientific research:**

HiveTracks builds on its strong Science Panel, which has researched and published the industry-standard of data science in the beekeeping space for decades.



**Prof. James Wilkes**  
Beekeeper, Farmer & Professor of Computer Science at Appalachian State University

- Science-focused founder of HiveTracks
- Pioneering cloud and mobile technology in the beekeeping space
- 100+ Research Grants by USDA



**Prof. Joseph Cazier**  
Professor of Computer Information Systems at Arizona State University

- Educational Analytics, Ecological Analytics, Energy Analytics, and Health Analytics
- 10+ Articles, 15 Book chapters, 3 United Nations Guidelines










The heart of HiveTracks is based on our academic, data-driven research generated by our founder James Wilkes (Professor of Computer Science) and our data-science expert Joseph Cazier (Professor of Computer Information Systems) which have published in the beekeeping space for years.

Join Us Today



**Your investment goes towards a measurable planet-positive impact while pioneering a nature-driven way to leverage positive impact commercially.**

