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PP-206 [Beekeeping Technology and Quality]

Where Do Swarms Prefer to Bivouac?

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Abstract

Swarms from the same apiary tend to bivouac on the same site, year after year. Why?

Method

Method: Survey research

Respondents: Members of 5 local beekeeping associations in the eastern US

Number of respondents: 36

Topic: Preferred bivouac site of the swarms they observe

Results

Features of Preferred Bivouac Sites

- Percentage of swarms from the same apiary bivouacking in the same site: 60%
- Average distance from the mother hive: 14 m
- Number of swarms bypassing closer potential sites: 50%
- Average height of the bivouac site: 5 m
- The predominant site is: On the branch of a tree: 86%
- Location on the branch: Near the outer edge of the tree: 71%
- Size of the branch at the bivouac site is: 2-5 cm: 53%
- Location is:
  lightly shaded: 66%
  with little wind: 51%

Discussion

Escaped swarms cause several problems:

1. Loss of desirable queen
2. Loss of honey crop
3. Injury to beekeeper
4. Irritated neighbors
5. Mite bomb

Bivouac traps may reduce escaped swarms

- Used widely in Russia
- Potential bivouac trap design
  - Attracts swarms
  - Easily placed
  - Easily retrieved

Further Research:

- Do scouts evaluate potential bvouac sites?
- How do scouts evaluate potential bivouac sites?
- How do scouts, and early arrivers, communicate the quality/desirability of potential bivouac sites?
- Evaluate potential bivouac trap designs

Testable Hypotheses

- *Distance:* Allows colony to sort itself, collect bees & queen
- *Height:* Safe, out of easy reach from ground
- *Position:* Accessible & secure; near end of a sturdy branch
- *Location:* Sheltered; little exposure to sun and wind

References

Linton, F. Bivouac Traps: Catch Swarms before They Depart. American Bee Journal, April 2025. Pages: 405-7.

Seeley, T. Bait Hives for Honey Bees. https://ecommons.cornell.edu/server/api/core/bitstreams/6a183063-f398-4552-b4dd-f14a9488faed/content

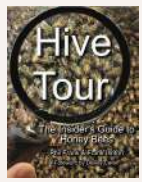
Tammy Horn Potter's Tree Branch method: https://forestry.ca.uky.edu/episode/woods-today-bees-and-swarms. The description of the tree branch bivouac trap starts 16 minutes into the video.

Russian text on Bivouac Traps (one of several): https://www.medovik.info/osnovy/roenie/ur.php From the website: "The site Medovik "Beekeeping and Bees" exists to help people who decide to study the science of beekeeping."

Note: For internet searches use the term "Russian scion" or "Привой и роевня"

Poster Design by: Grey Boyce

Read Frank's Books:



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Bivouac traps: capture swarms within the apiary

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1Background
Bees swarm, despite swarm prevention practices; and swarms escape, despite swarm traps. Escaped swarms cause four problems. First, loss of a good queen – and half her genes. Second, loss of the workers producing the honey crop. Third, the risk of injury to the person attempting to retrieve the swarm. And fourth, the likelihood the swarm will take up residence in the walls of a neighbor's house.

Problem description
Bivouac traps are a means of capturing swarms that is used in Russia, where they are known as Russian Scions "Привой и роевня", but these are rarely used elsewhere and their efficacy is unknown. Preliminary research reveals that about half the swarms from a given apiary may choose the same bivouac site repeatedly. More study is needed to discover what makes bivouac sites desirable to swarms. Potential features include proximity, accessibility, shelter, safety, and structure.

Methodology
The proposed methodology is to analyze existing bivouac sites within apiaries, to rank the sites by their desirability to swarms, and to rank the apparent values of their features to swarms. Then, to evaluate these features one by one experimentally, as was done to determine bees' nest site selection criteria. And finally, to construct, deploy, and evaluae bivouac traps based on these features.
Also, as we evaluate bivouac trap attractiveness to swarms, we will simultaneously evaluate designs that enable easy swarm retrieval.

Results and conclusion
The first result will be an enumeration of the features and values that swarms desire in bivouac sites.
The second result will be a bivouac trap that swarms cannot resist and one that swarms are easily retrieved from.
How honey bees investigate and evaluate bivouac sites, and how they communicate the location of the selected site might also be observed during this study.

Practical implications for beekeepers
By using bivouac traps to capture swarms that otherwise would have escaped, beekeepers will retain their desirable queens and their valuable honey crop, reduce their risk of injury, and of irritating their neighbors.