

The Shifting Seasonality of Beekeeping with Climate Change

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Wild bees foraging



Mud-walled stationary hives



Apis Cerana bees in box hive



Group photo from field visit to Naggar

Context

- Climate change is causing beekeepers globally to experience decreased productivity.
- Himachali beekeepers rely on their product for income and are adopting more productive modern methods to advance economically.
- Climate change in Himachal Pradesh is resulting in increased average temperatures and erratic rainfall.
- The high hills are especially sensitive to climate change, so the slow effects of climate change are especially visible here.
- Beekeeping is an agricultural process, and agricultural workers are more aware of changes in seasonality than the average person.

Goals

- Evaluate the extent to which beekeeping and seasonality in Himachal Pradesh are impacted by climate change and examine how beekeepers perceive and adapt to its impacts.
- The knowledge of beekeepers provides a unique, non-scientist perspective on the ways in which climate change is impacting the seasonal rhythms of life.

Methods

- We interviewed beekeepers in the Mandi, Shimla, and Kullu districts of Himachal Pradesh.
- We consulted apiculture experts to corroborate the concerns expressed to us by beekeepers.
- We spoke to government officials to learn about trends in pesticide use and modern beekeeping in Himachal Pradesh.
- We observed the hive types used by beekeepers at different altitudes.



Group photo from field visit to Gumma



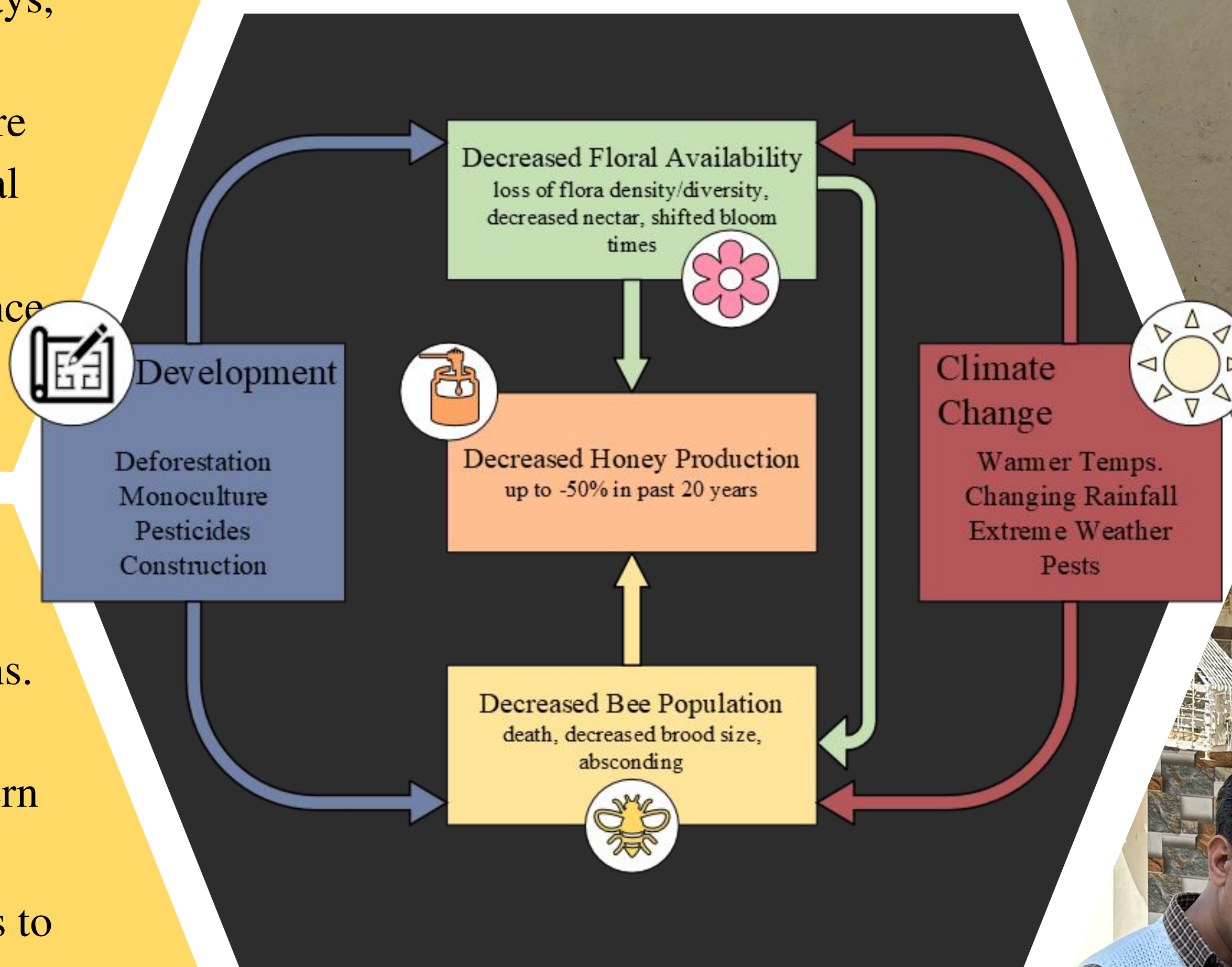
Examples of traditional wall and log hives

Results & Discussion

- Beekeepers reported learning the importance of reducing pesticide exposure and providing supplemental food for their hives as a result of university-run training.
- Some beekeepers noticed changes in seasonal timings on the scale of 10-15 days, while others noted no change.
- Modern beekeeping methods require more maintenance and attention than traditional methods.
- Beekeepers at different altitudes experience climate related changes differently.

Conclusions

- Intensive monoculture and urbanization have decreased flora and hive populations.
- Traditional beekeeping is less sensitive to increased temperature variability than modern methods, requiring less maintenance.
- Beekeepers are returning to traditional methods to reduce hive maintenance or switching to modern methods to increase productivity.
- Some stationary beekeepers have expressed concerns about the coexistence of traditional and modern methods.
- Some apicultural experts consider migratory beekeeping a sustainable option for commercial beekeepers.



Recommendations

- Increased access to education about natural farming methods and opportune times to spray pesticides will allow beekeepers in Himachal Pradesh to reduce the exposure of their colonies to harmful chemicals.
- Local communities should investigate ways to decrease pesticide use by implementing natural farming or nontoxic pesticide alternatives.

Acknowledgements

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Beekeeper showing an empty box hive



Interviewing beekeepers in Shegli Village



Interviewing beekeeper in Shegli Village



Wild bees foraging on white clover