Assessing competition between domesticated bees and wild pollinators

State of the art and a road map for the future
Workshop 25-26 January 2022, Silkeborg, Denmark
Call for abstract | Deadline 1 November 2021

BACKGROUND

Recently, awareness of potential negative effects of domesticated bees, e.g. honeybees, on wild pollinators due to competition has been raised, and the extent of negative consequences for wild pollinator populations due to food competition has been debated and discussed intensively. The negative effect of competition comes on top of other threats to wild pollinators, e.g. land use, including landscape fragmentation, eutrophication, pesticides etc.

Unfortunately, lack of scientifically based assessment methods makes it difficult to settle disagreements about the relative impact of competition and, thus, to reach consensus among different interests. Therefore, the purpose of this workshop is to facilitate a scientifically driven process towards identifying methods to assess the degree of competition between domesticated bees and wild pollinators.

The risk assessment of competition may be either retrospective or prospective. Retrospective methods assess the actual conditions as either acceptable or not acceptable with respect to the competitive pressure between domesticated bees and wild pollinators and is primarily based on ecological indicators of competition that are based on field studies. Prospective assessment predicts the risk of future actions, using risk models that predict consequences of future scenarios, where domesticated bees are introduced in the pollinator ecosystem.

Ecological indicators and risk models must go hand in hand in the assessment in order to identify existing and future problems on a scientifically sound basis. Additionally, input from the ecological indicators is useful by separating problematic from unproblematic cases and thereby generating both validation and testing data. However, it is a two-way interaction because the risk models can facilitate a definition of key ecological indicators to be specific for competition without interaction from other factors. This workshop will address ecological indicators and risk models as well as the interaction between them.

ECOLOGICAL INDICATION OF COMPETITION

Contributions are welcome that suggest measurable ecological indicators disclosing the degree of competition between domesticated bees and wild bees. Competition may lead to a lack in food resources and, consequently, methods that can measure the available nectar and pollen resources are relevant. Furthermore, methods assessing the demand for resources based on the abundance of wild pollinator species are relevant for the workshop. The abundance of domesticated bees may also be an indication of competition, and therefore methods to quantify the density of domesticated bees in flowers are highly relevant.

Due to the complex interactions between domesticated bees, wild pollinators and resources, data mining is relevant in order to disclose relationships that may indicate competition. This includes analysis of pollinating networks or close analysis of pollinator behaviour in order to disclose signs of avoidance between domesticated bees and wild pollinators. The challenge of any indicator is to be specific to food competition and, thus, to avoid interference with other factors that may impact the fitness of the wild pollinators as well. Another challenge is that field studies fail to discover competition in case the most vulnerable pollinators are already extinct historically due to competition.

RISK ASSESSMENT

Contributions are welcome that can facilitate the development of risk assessment methods to predict the risk of negative effects on wild pollinator societies due to establishment of apiaries. Realistic risk assessment is urgently needed in order to avoid too restrictive regulations in relation to setting up apiaries that will be unnecessarily harmful for the bee keeping society on the one hand, and a too relaxed attitude to the etablishment of apiaries that will harm wild pollinator populations on the other. The risk assessment of competition is facing the dilemma that there is an urgent need to assess the risk, while, at the same time, the needed assessment lacks knowledge about the complex interactions, behaviour and life conditions of the pollinators. ecosystem. However, this dilemma between the need of assessment and the lack of knowledge is

AARHUS UNIVERSITY

not restricted to the assessment of competition between domesticated bees and wild pollinators, but rather the common and general condition for risk assessment, e.g. regarding chemicals, pandemics, gene modified products, medicine etc. Thus, guidelines and paradigmsmay exist in other disciplines of risk assessment that can be useful in the risk assessment of competition between domesticated and wild pollinators. Any suggestions to support developing risk assessment are highly relevant for this workshop.

PROGRAM

The workshop approaches the main subject in two ways: (1) A presentation and scientific discussion of existing methods and models that can support an assessment of competition; (2) A discussion session to make the road map towards novel assessment methods, based on existing methods and identification of knowledge gaps that need to be addressed in the future in order to promote development of improved, realistic assessment methods. After the workshop, all participant are invited to co-author a road map towards assessment methods that will be published either in a scientific journal or as a scientific report.

DAY 1. Existing methods for assessing competition

Presentations of 30 minutes, incl. a short discussion. This day will disclose the methodological state of the art for assessing the competition between managed bees and wild pollinators.

DAY 2. The road towards scientifically based risk assessment methods

What can we do today and what is the most urgent lack of knowledge?

Breakout groups will discuss ecological indicators and risk models, respectively. Each group will identify the most promising current methods and the most urgent need of new knowledge in order to proceed.

The input from the breakout groups will be presented and discussed. Based on the discussion, headlines will be defined for the road map to be published after the workshop.

ABSTRACT OUTLINE

Please submit a 1-2 page abstract describing the method and the potential of applying the method for assessing competition between managed bees and wild pollinators.

More information and registration:

https://bios.au.dk/forskningraadgivning/temasider/bee-workshop/