

A multifactor study of Longhorned and Click Beetles in southern Sweden



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Introduction

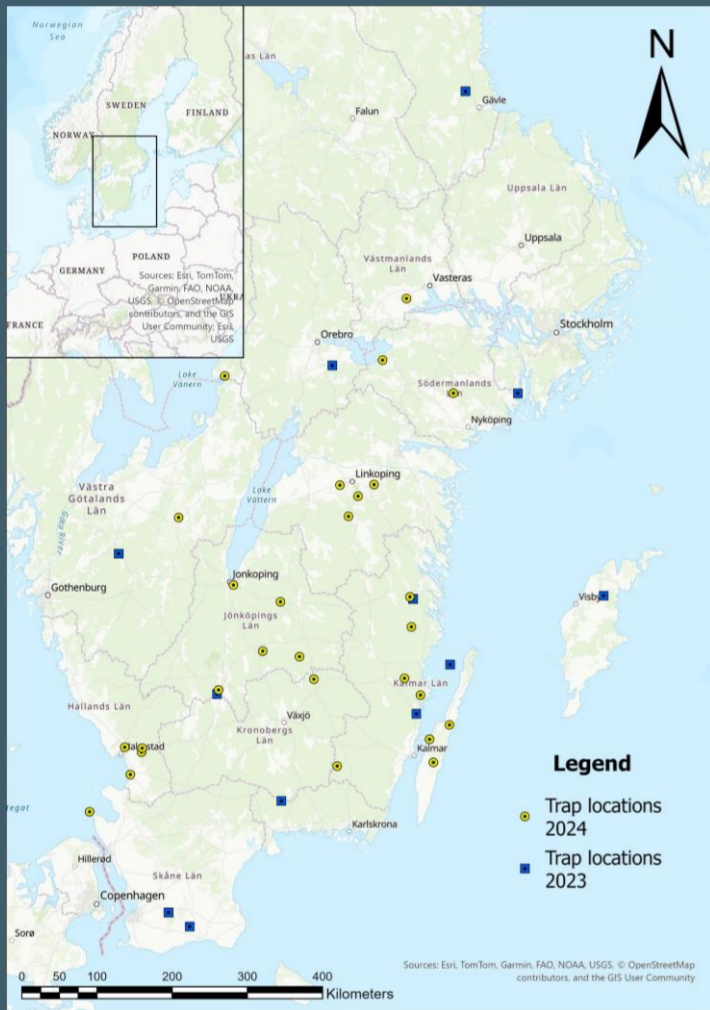
- **Biodiversity** is vital but threatened. Insects are a big part of biodiversity, including the at least 360 000 beetle species. An important subgroup is the saproxylic beetles (wood living) which is the focus of this study.
- Oaks (*Quercus robur*) is an important part of biodiversity by providing habitat for roughly 1000 species in Sweden, several of them insects.
- **Longhorned beetles** (*Cerambycidae*) are one of the most diverse groups with 118 Swedish species. Threats include changed forestry practices.
- **Click beetles** (*Elateridae*) is a predator of cerambycids, some species are threatened as well.
- **Pheromones** are chemicals that function as a mean of communication between individuals. These have proven very useful for species monitoring.
- Species identification apps have increased, however insects are often more difficult to identify due to their size, for both humans and apps.



Example Elaterid



Example Cerambycid



Trap system used in study

Methods

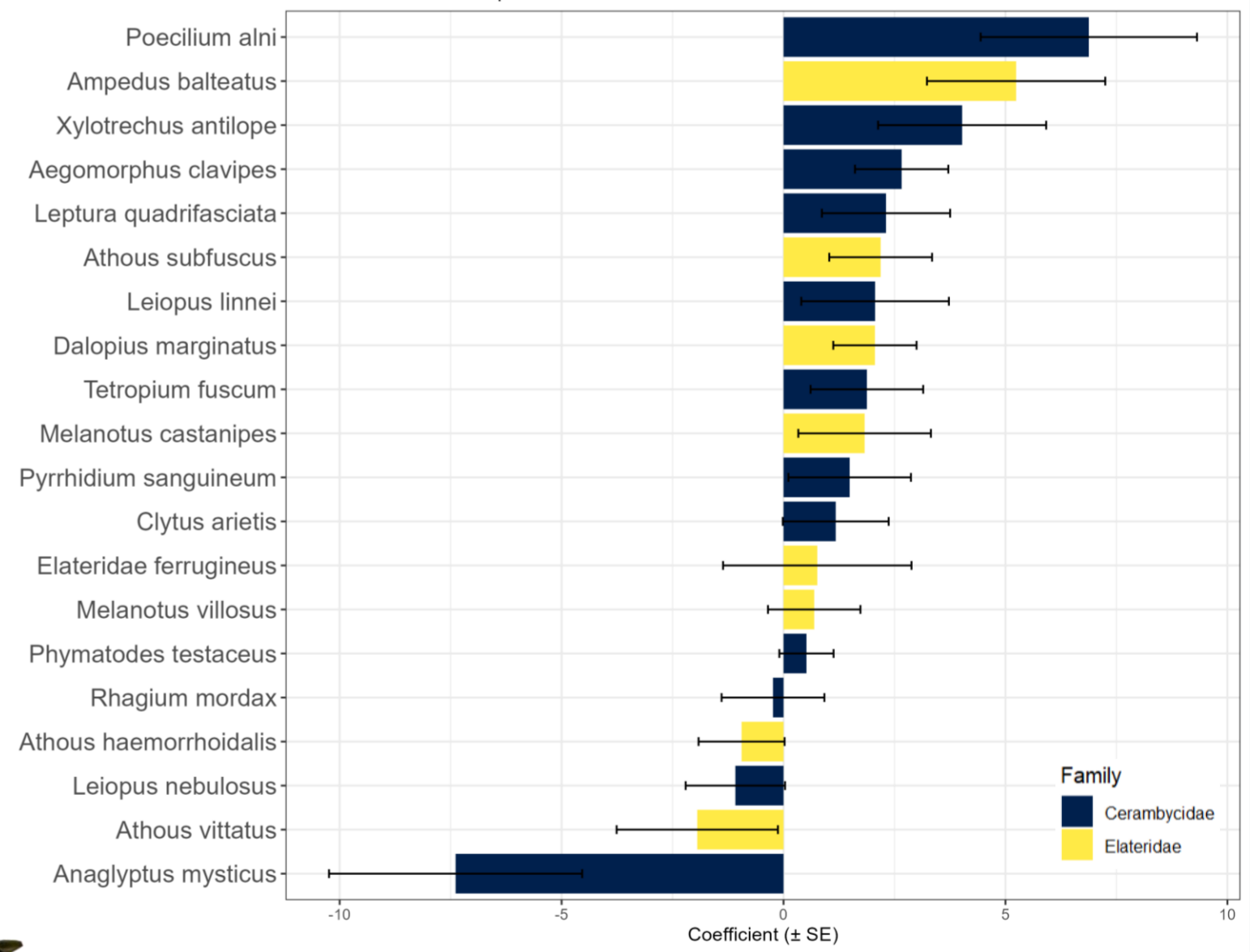
- 28 pheromone traps were out from May to September across southern Sweden. All sites contained oaks, and they were emptied roughly once a month.
- Nine different pheromone types were used across two batches.
- The caught species were determined with a key and with the help of an expert.
- Pictures were taken of all relevant individuals for the app assessment.
- Data from 2024 were combined with data from 2023 consisting of 12 sites across much of the same area.

Aims

- **Investigate** species diversity across southern Sweden.
- **Detect** potential predator-prey connections between the beetle families.
- **Determine** the effects of amount and volume of trees on beetle species diversity.
- **Evaluate** if land cover has any effect on the beetle families.
- **Assess** the accuracy of species identification photo applications.

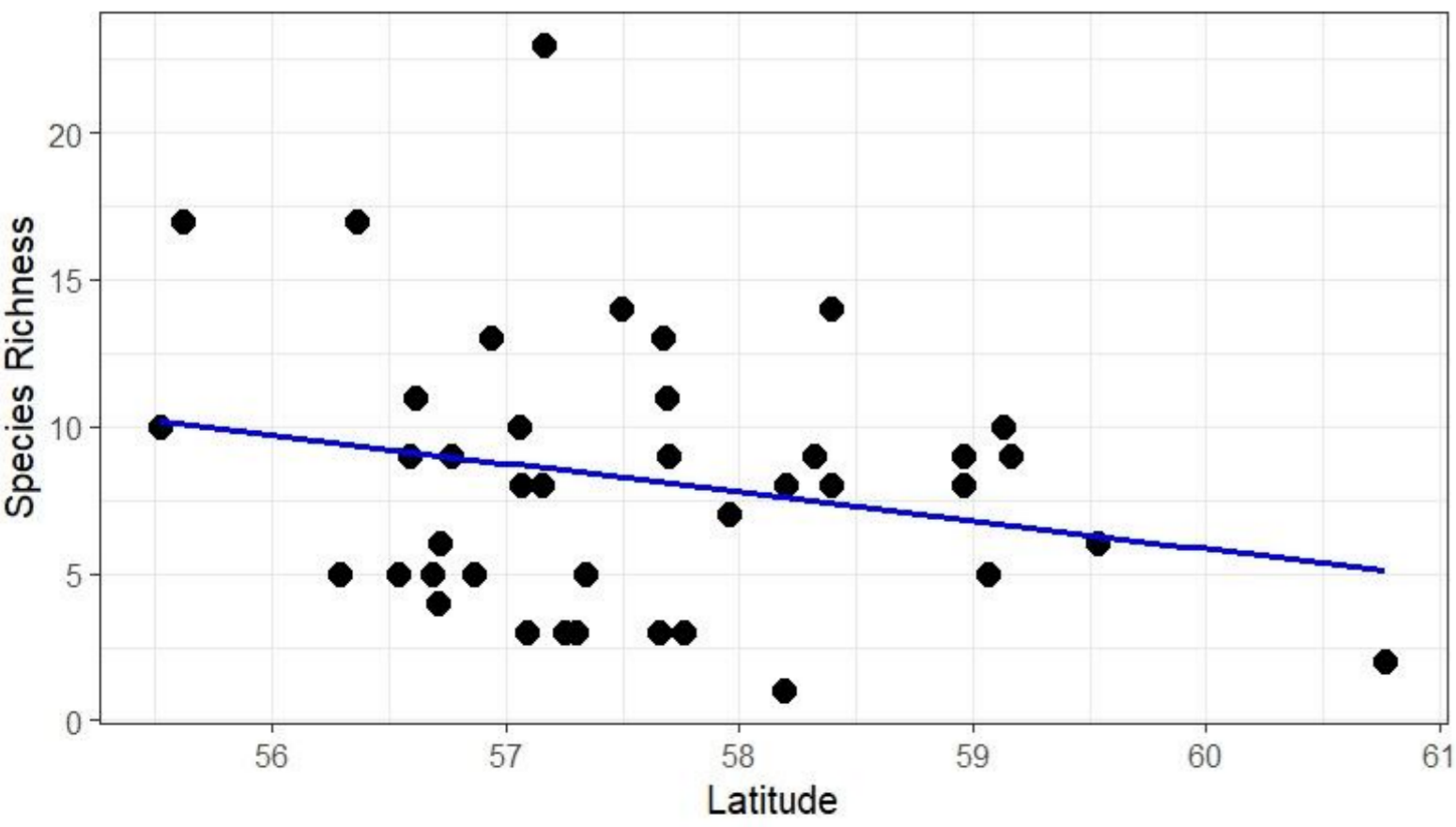
Relationship between forest cover and abundance

How forest cover affect species abundance



Species Richness vs Latitude

Total beetle species richness decreasing with an increase in latitude



Results and discussion

- **1817 individuals** across **59 species** were found in total across all sites.
- Species richness is connected to latitude, but it was not significant due to the smaller latitudinal range.
- A prey predator model between the beetle families showed **no specific interactions**, which means that all species interact with each other.
- Most of the **20 tested species** are neutral to type of landcover, which indicates that most species can survive outside strictly forested areas.
- **Oaks are important** for species diversity and does function as biodiversity hotspots, but mainly at larger scales.
- Identification apps were **mediocre at best**, and their success rate depend on photo and model training quality.