

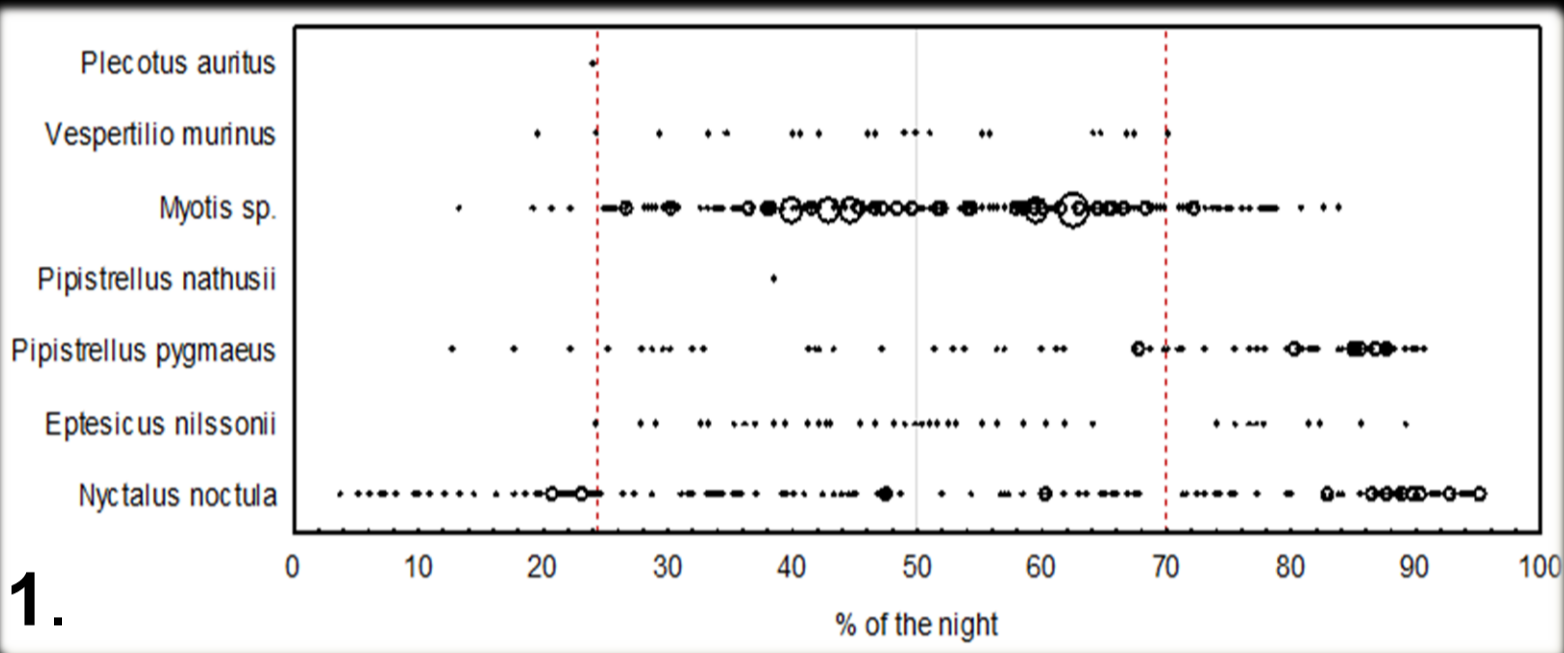
When to survey during the night

- Streamlining bat monitoring efforts

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Background Approximately 25 % of the world's bat species are threatened with extinction. Since bats provide important ecosystem services there is need for improvement in the methods for field work. Recommendations from experienced fieldworkers are that fieldwork should be conducted in the beginning of the nights since there is a dip in bat activity around midnight. There have also been different results in how weather affects bats. This reduces the efficiency of fieldwork severely.

The aim of this study is to provide guidelines for start, end and length of fieldwork when surveying bats and to further investigate how weather effect bats.



1.

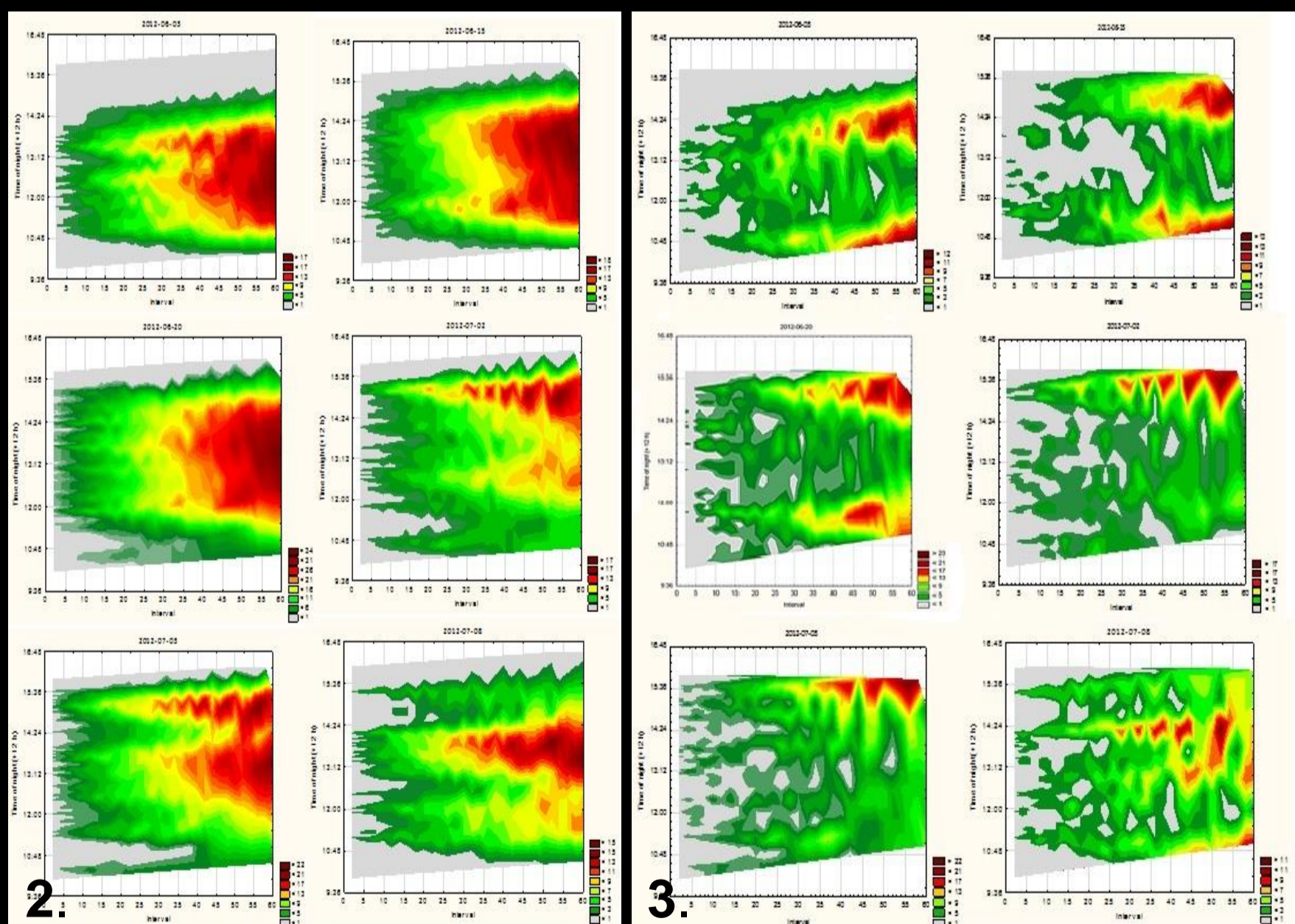
Factors	Number of species	Sum of observation	Sum of <i>N. noctula</i>	Sum of <i>M. daubentonii</i>
Temperature	- 0.225	- 0.177	- 0.211	- 0.149
Cloud coverage	0.265	- 0.595 (*)	- 0.403	- 0.792*
Wind speed	0.627 (*)	0.241	- 0.056	0.175
Humidity	- 0.693*	- 0.084	- 0.175	0.695*
Air pressure	0.177	0.570	0.252	0.129
Moonlight visibility	- 0.232	0.064	- 0.029	0.543

Methods

- The fieldwork was conducted between June and July within Tinnerö Eklandskap.
- The occurrence pattern of the identified species where summed over all nights and put in an occurrence graph (1).
- Linear regression where used to test weathers factors connection to bats. *r* values displayed.
- The distribution of observations (2) and change in activity (using Webster's method) (3) per night where calculated on the five most frequent observed species using different time intervals (y-axis: time of night +12 h; x-axis: 2 – 60 min).

Results

- E. nilssonii* started last while *V. murinus* finished first.
- Only two weather factors affected all aspects of bats the same. Temperature had negative impact while air pressure had positive effect.
- The distribution of observation was overall great in the middle of night.
- The activity was overall constant in the middle of night with changes at sunset and sunrise.



There is no evidence of a dip in bat activity around midnight and the most efficient time to survey is between 25% - 70% into the night.

Except for temperature and air pressure, weather factors seem to affect species differently and this needs to be further investigated.