

The Israeli Butterfly Monitoring Scheme (BMS-IL):

*taking the European tradition
into a unique and important arena*



אגודת חובבי הפרפרים בישראל
Lepidopterists' Society of Israel

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Dept. Conservation Biology

UFZ – Helmholtz Centre for Environmental Research

Future of Butterflies in Europe, 30.3.2012



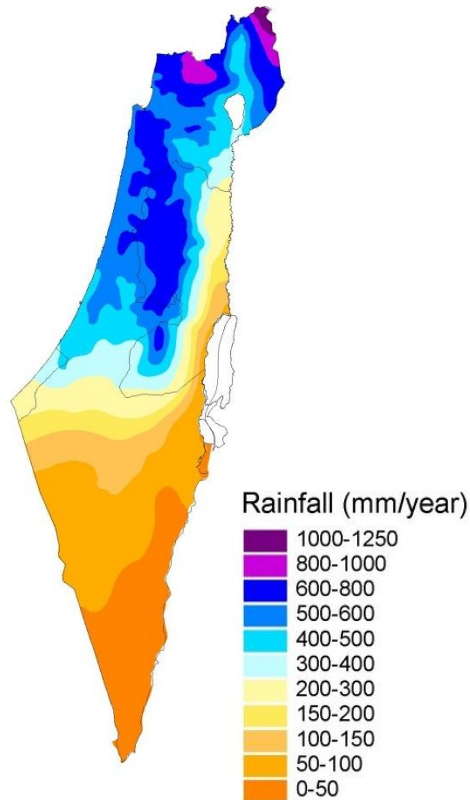
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Why is Israel an „interesting arena“?

1. Climate change: How will it affect species?

Israel provides the „Southern“ perspective

Anthocharis cardamines



Gonepteryx cleopatra



Why is Israel an „interesting arena“?

Four bio-geographical zones:

Effects of climate can be tested on southern, northern and western edges of the species' ranges



Papilio alexanor



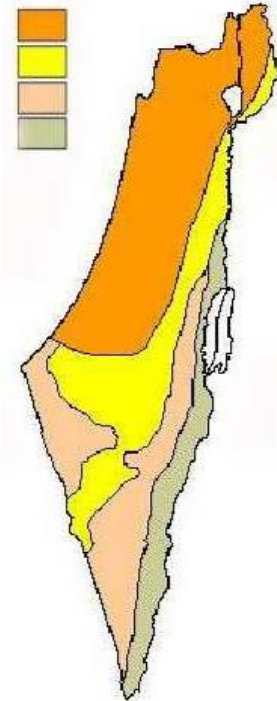
Azanus ubaldus



Euchloe fallouii



Mediterranean
Irano-Turani
Sahara
Sudani



Distribution maps:
Israel: Benyamini 2000,
Europe: Higgins & Riley 1984

Why is Israel an „interesting arena“?

2. Species migrate through Israel - Not only birds



Vanessa cardui



Danaus chrysippus



www.eilat-guide.com/birds.html,

Source: Dr. Yossi Leshem



Why is Israel an „interesting arena“?

2. Species migrate through Israel

and many start in Israel or expand yearly



Colotis fausta



Anaphaeis aurota

- Yearly dynamics (*timing and triggers*)
- Overwintering (*success or failure*)
- Time of disappearing (*abrupt cold events*)
- Time of arrival into Israel (*abrupt heat*)



Vanessa cardui



Danaus chrysippus



Catopsilia florella



Leptotes pirithous



Azanus jesus

➔ **Potential indicators of climate change from the perspective of fluctuations / extreme events**

BMS-IL: Brief history

2003-2008:

- Regular monitoring in 4 transects, Racheli Schwartz-Tzachor (PhD)

April 2008:

- First conference “Butterflies of the Middle East”:
Presentations from TMD (Germany), BMS-NL, BMS-UK
- Decision to adopt the European (Dutch) protocol

April 2009:

- 14 species of butterflies (finally!) protected
- Scheme launched



BMS-IL: Brief history

Elements of the scheme:

- *Transect observations*

➔ Twice a month, 1 October - 30 June (we skip summer!)

So far:

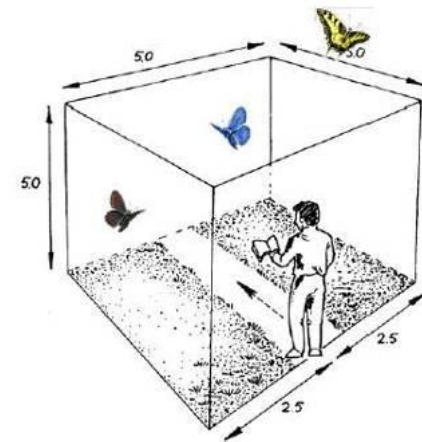
39 transects marked

31 walked

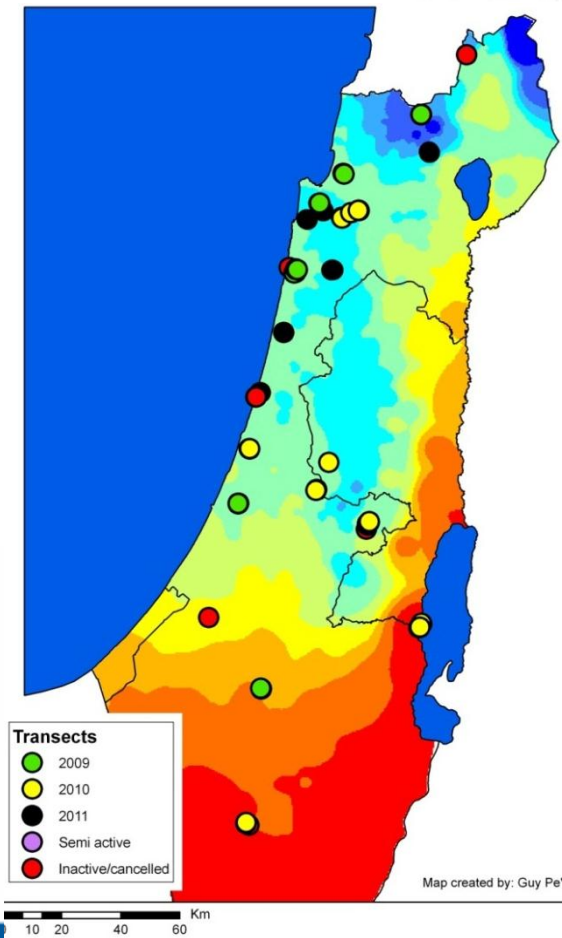
19 provide >1 year data

- *Sporadic observation collected*

- *Protocols for rare species*

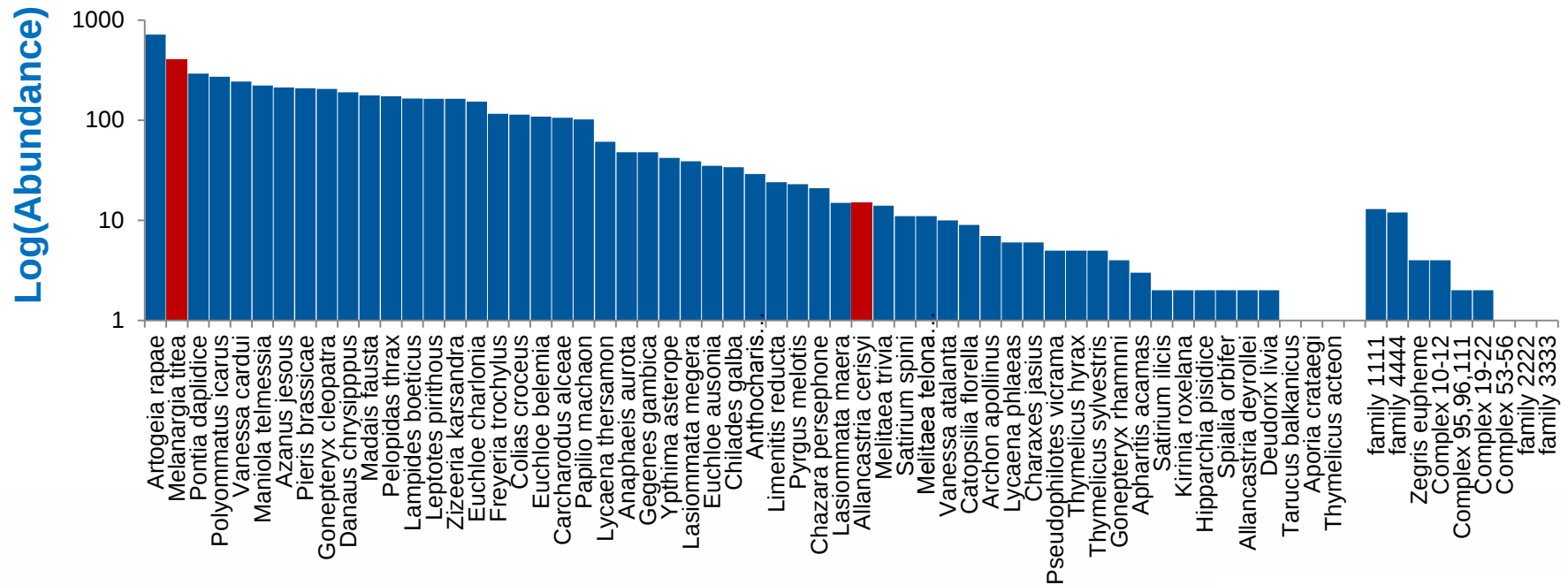


© Chris van Swaay



Some results from preliminary analyses

Using data from 15 transects,
222 days, 5106 butterflies,
56 species

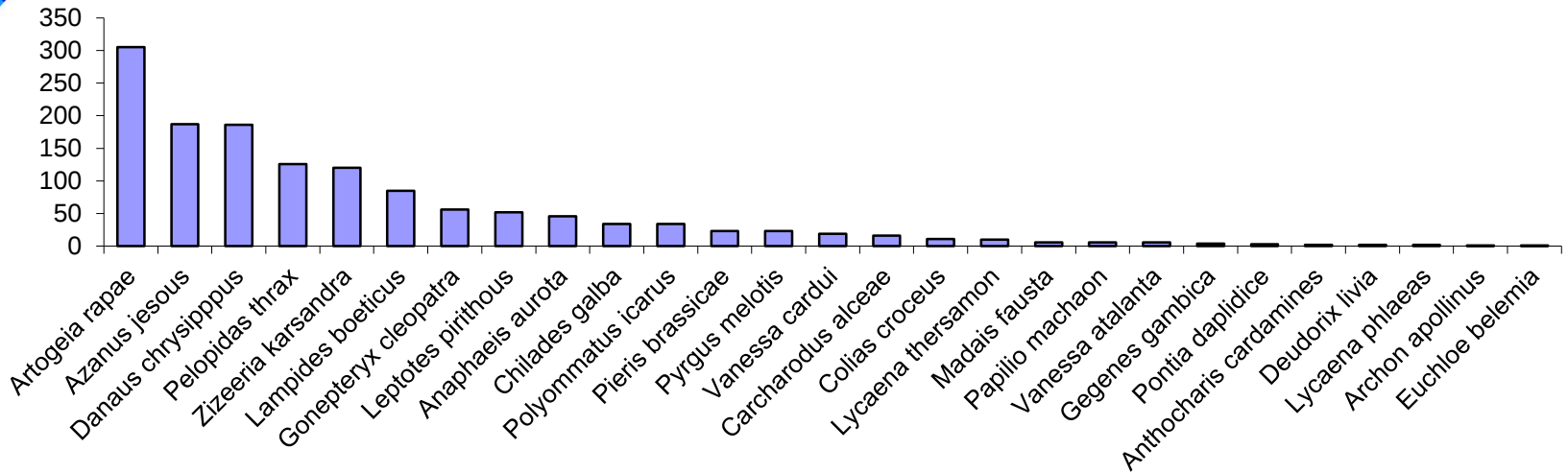


No surprises, but interesting aspects

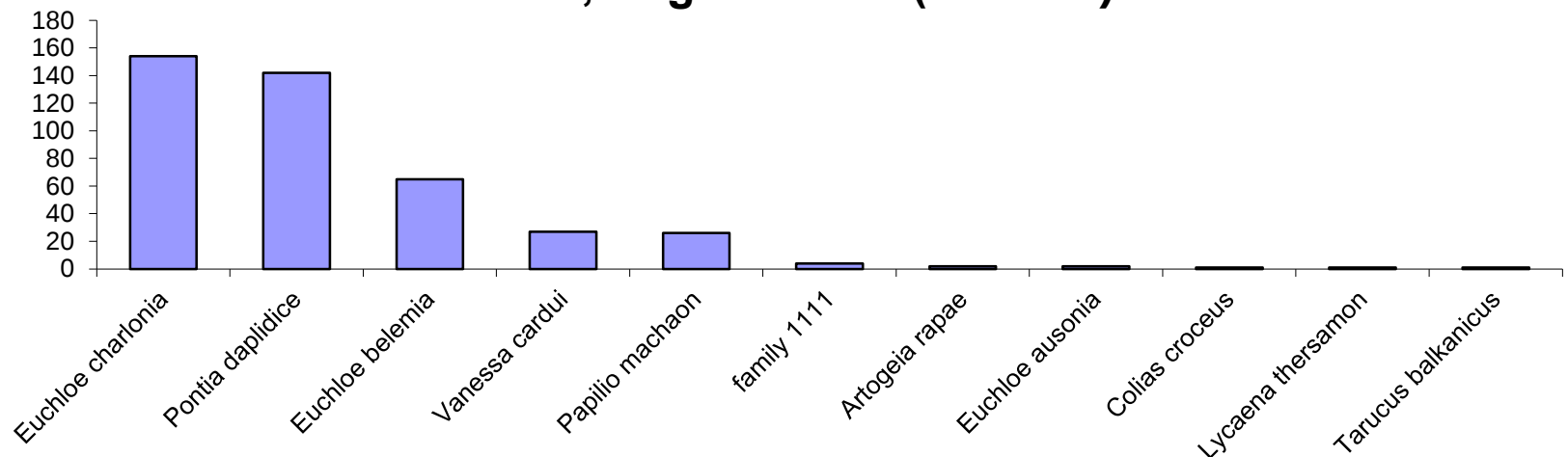
Melanargia titea*, *Aporia crataegi*, *Kirinia roxelana*, *Allancastris cerisyi

Focus on some transects

Sasa, village in upper Galilee (950 mm)

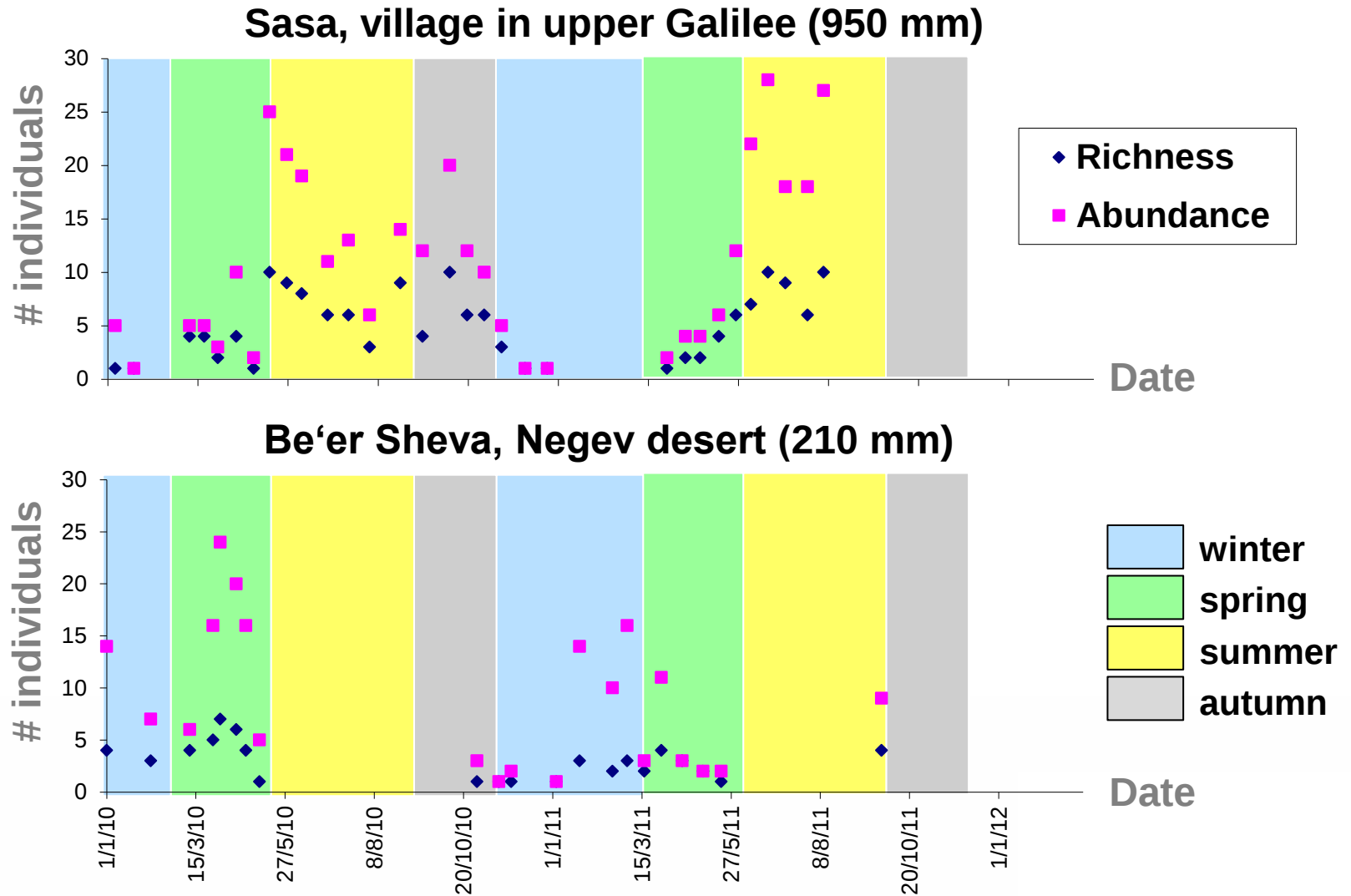


Be'er Sheva, Negev desert (210 mm)



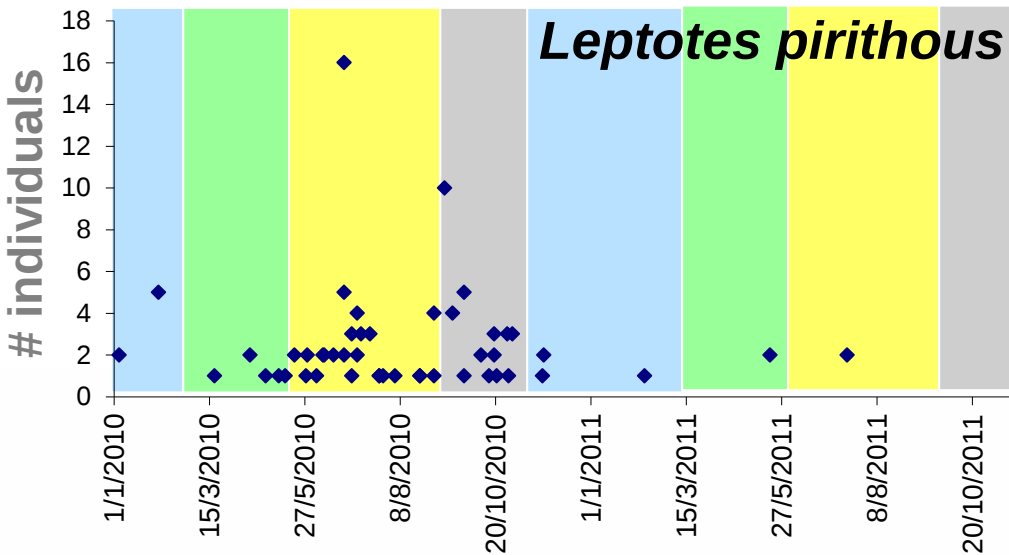
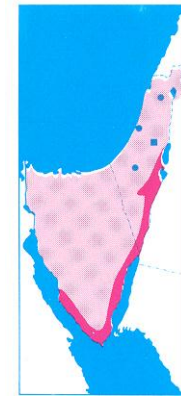
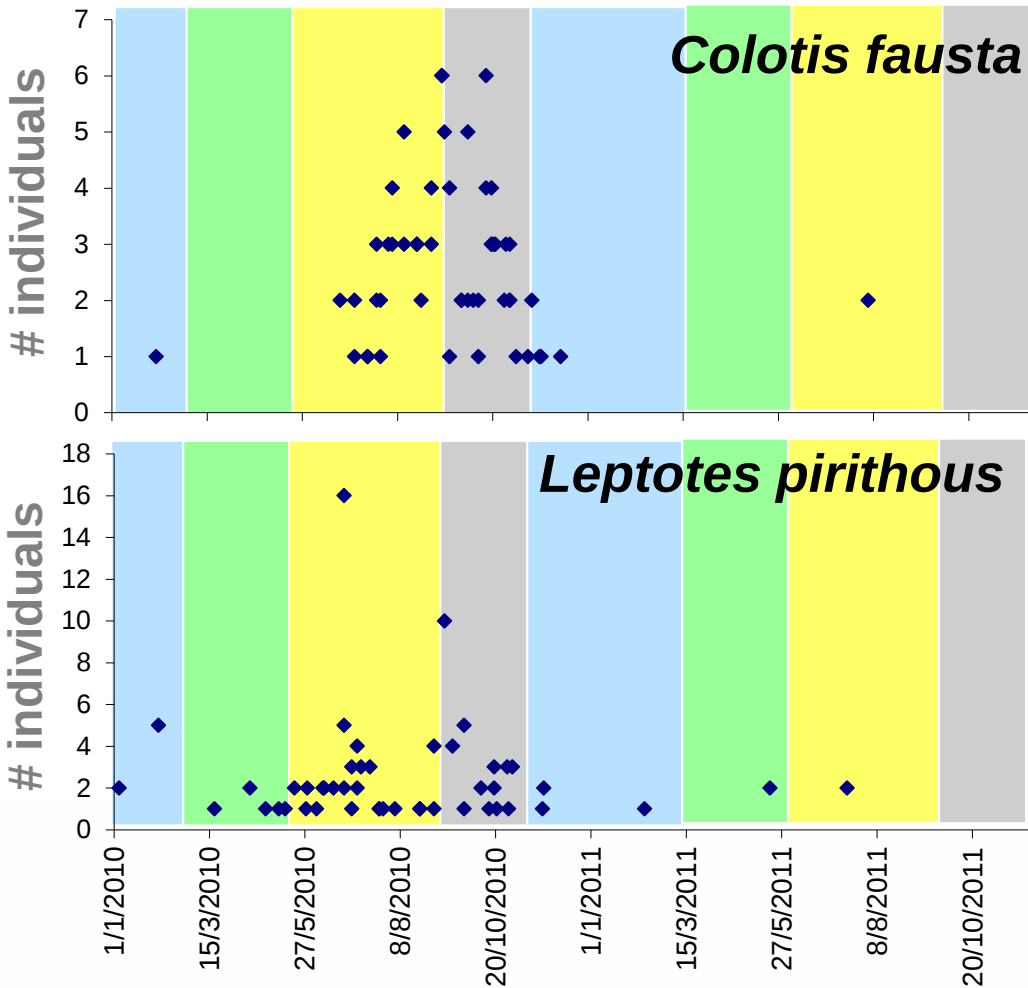
Rich in north, poor in south

Seasonality



Peaking time in north = poorest in south

Focus on a few species

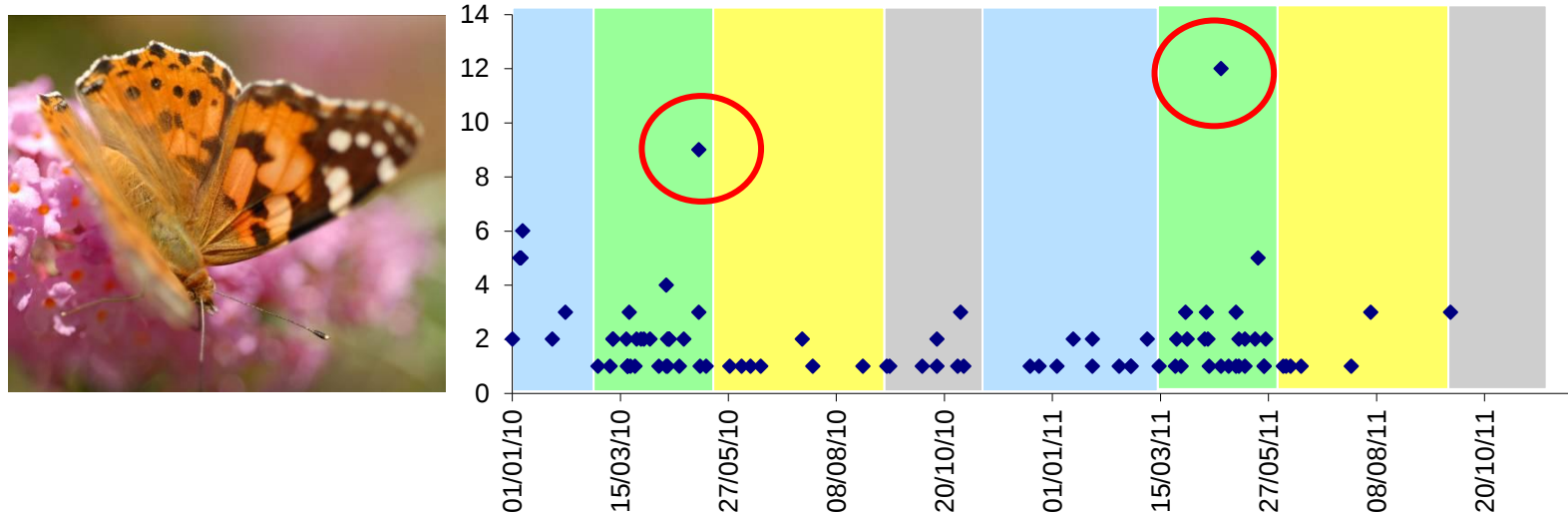


- winter
- spring
- summer
- autumn

Overwintering captured, but too few observers in summer

Focus on a few species

Vanessa cardui



super-abundance (?) relating to migration (?)

Time will tell

Lessons learned

- **Complicated country: peak in one region doesn't overlap with another**
- **Overwintering and other indications of climate (including phenology, of course): seem successful**
- **But we lack summer observations – solutions needed if interested in year-round dynamics**
- **Capturing initialization of migration: time will tell**

Challenges and Prospects

- **Funding sought: so far 100% (!) voluntary**
- **Poor coverage in the desert and along the Jordan valley**
- **Rare species not yet systematically monitored**
- **Transects in 5 protected areas, wish to enhance conservation-relevance**
- **BMS not yet included in LTER**

Acknowledgements

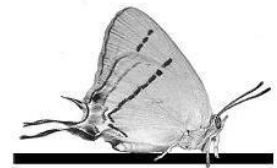


**Racheli Schwartz-Tzachor, Dubi Benyamini,
Israel Pe'er, Gadi Ish-Am, Zvika Avni,
and all the volunteers**



**April 2013 in Israel:
30 years for the Lepidopterists' Society.
Time for a visit?**

**Thank you for
your attention!**



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Long term patterns: What do we actually see?

1. Some species decline. Causes:

Urbanization



Loss of pollinators



Other



Succession

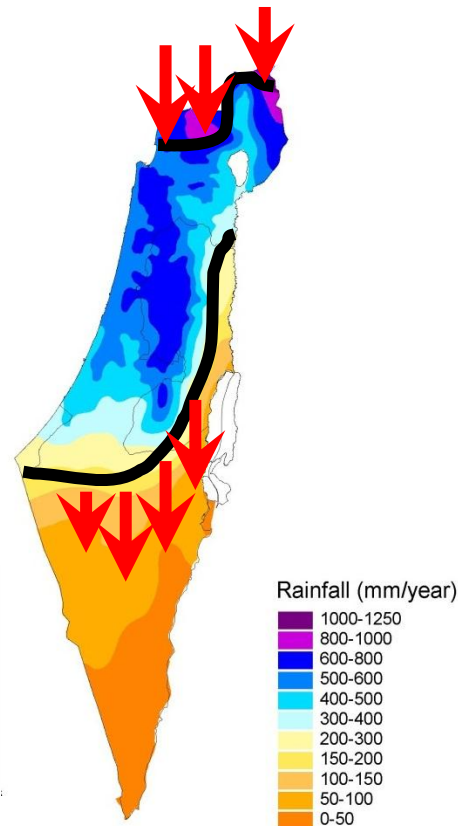


Unknown



Long term patterns: What do we actually see?

1. Some species decline
2. Many expand, often southward - Rapid anthropogenic changes overweigh climate



Gonepteryx rhamnii



Polyommatus icarus

Long term patterns: What do we actually see?

1. Some species decline
2. Many expand, often southward - Rapid anthropogenic changes overweigh climate
3. Migratory species arrive earlier, stay longer, and often overwinter successfully – seem to provide the only „clear“ picture on climatic impacts = increase in fluctuations



Anaphaeis aurota



Danaus chrysippus



Catopsilia florella