Department of Ecology





## **Viel-Falter: Butterfly Monitoring**

Johannes Rüdisser<sup>1</sup>, Petra Schattanek<sup>1</sup>, Erich Tasser<sup>2</sup>, Peter Huemer<sup>3</sup> & Ulrike Tappeiner<sup>1,2</sup>







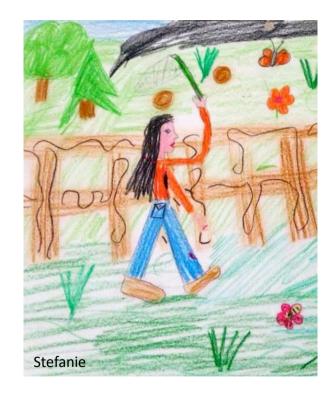






## Missing biodiversity data





The global man-made biodiversity crisis is real, and so is insect decline, however, we still lack adequate (long term) biodiversity data for a sound monitoring!

















## **Viel-Falter Monitoring**

#### **Experts**

4 year
assessment cycle:
¼ all sites/year
(stratified sampling)

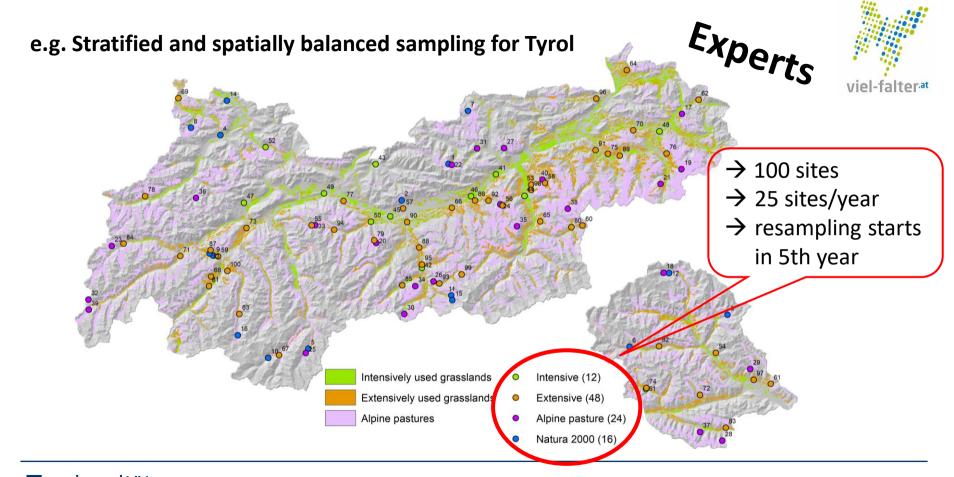
reference data

#### **Volunteers**

#### **Public**

**eurac** research





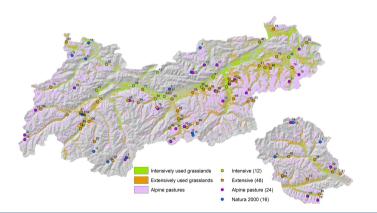


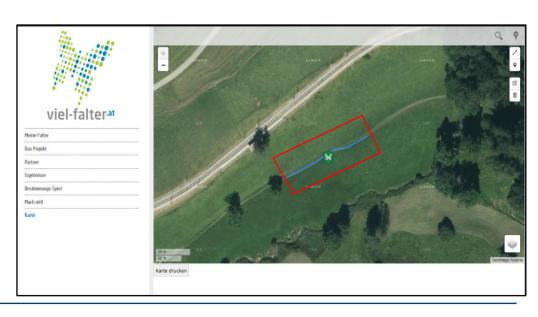
#### Stratified and spatially balanced sampling





- → 4 butterfly assessments per site an year
  - 2.5m \* 50m transects 'section' (Pollard & Yates, 1993)
  - 30 min (20\*50m)
  - Supporting online DB
- → Additional vegetation survey





















## **Viel-Falter Monitoring**

#### **Experts**

Vorarlberg

4 year
assessment cycle:
¼ all sites/year
(stratified sampling)

reference data

#### **Volunteers**

regular observation at predefined sites with simplified assessment scheme

data on abundance and diversity trends

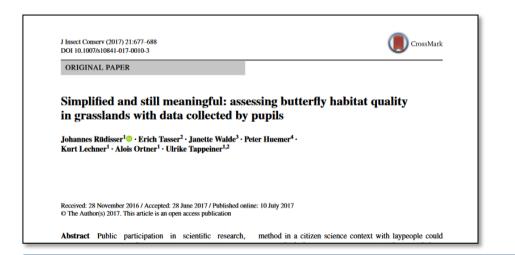
#### **Public**

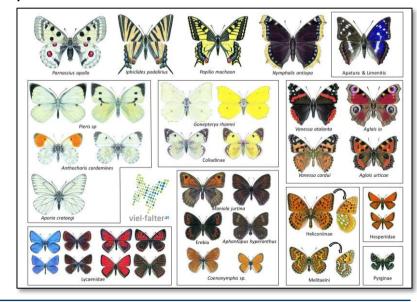


#### Simplified assessment scheme

- Volunteers
- viel-falter.at

- → Personal training
- → Simplified assessments (laypeople)
  - 2.5m \* 50m transects (Pollard & Yates, 1993)



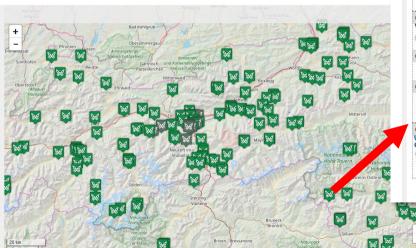




#### Simplified assessment scheme

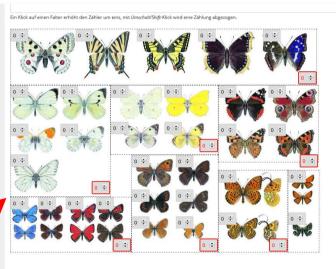
- → Personal training
- → Simplified assessments (laypeople)
  - 2.5m \* 50m transects (Pollard & Yates, 1993)
  - Supporting online DB











>50 active volunteers















## **Viel-Falter Monitoring**

#### **Experts**

Vorarlberg

4 year assessment cycle: ¼ all sites/year (stratified sampling)

reference data

#### **Volunteers**

regular observation at predefined sites with simplified assessment scheme

data on abundance and diversity trends

#### **Public**

**eurac** research

environmental education activities, school projects, public relations work

reporting and PR



#### **Environmental education activities**

Public



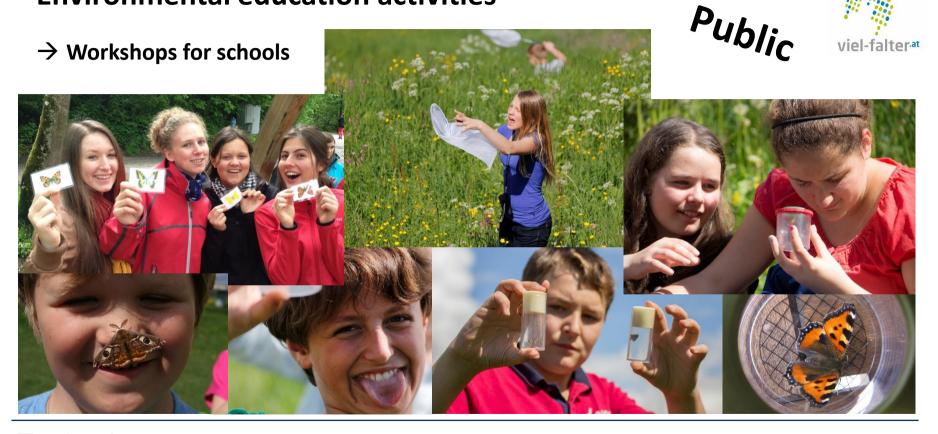
- → Butterfly identification course ✓
- $\rightarrow$  Excursion  $\checkmark$
- → Photo competition ✓







### **Environmental education activities**





#### **Environmental education activities**





- → Butterfly identification course
- → Excursion
- → Photo competition
- → Junge UNI
- → Press release
- → Homepage, Facebook







Tiroler Tageszeitung













## **Viel-Falter Monitoring**

#### **Experts**

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eurac

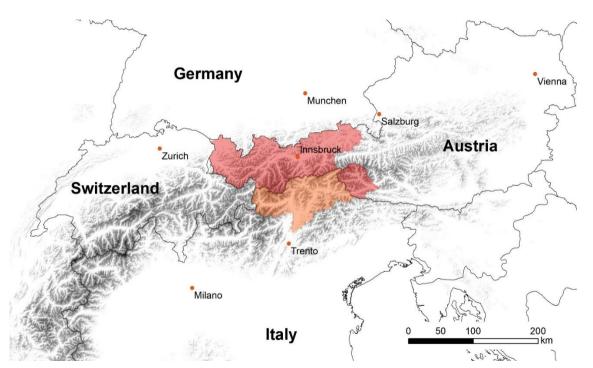
environmental education activities, school projects, public relations work

reporting and PR



#### Covered area ...





#### → Tyrol since 2018

- 100 Sites
- 50 volunteers
- Financed until 2022

#### → Vorarlberg starts 2020

- 100 Sites
- Financed until 2024

#### → South Tyrol since 2019

- >160 Sites
- Only expert assessment



#### Strengths

- Reproducibility
- Presence and absence data
- **Representative** sampling (area coverage)
- Enables landscape oriented analysis
- Combines strengths of expert and volunteer involvement
- Low barriers to involve laypeople

#### Weaknesses

- Preselected observation sites challenges some volunteers
- Finding dedicated volunteers for the proposed tasks is demanding
- Only punctual assessments (1000m²)



### **Opportunities**

- Expansion to **further regions** is feasible
- Expansion to **further taxa** (Bumble bees, soil fauna, bats, ...)
- Insects are currently a 'hot topic'
- Broaden and deepen the interest for butterflies and insects in general
- Stimulate environmental protection

#### **Threats**

- Expert pool is relatively small
- **Funding** after 2022/24









## **eurac** research

















Ausgezeichnet von der Österreichischen UNESCO-Kommission



#### Results ...





Fabriciana niobe

... will be presented soon!





Department of Ecology





## **Questions?**

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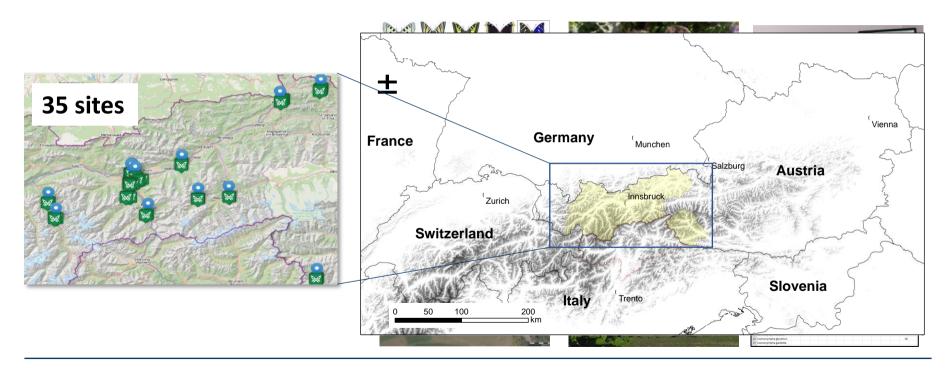






# Can we predict butterfly habitat quality with data collected by pupils?







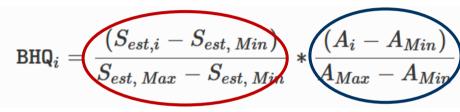


## **Determine Butterfly Habitat Quality (BHQ)**

#### Expert assessment

UF 17: GIESSENBACH	1	2	3	4	∑ Individuals
Papilio machaon		3			3
Pieris brassicae		1			1
Pieris rapae	5	4	4	7	20
Pieris napi	3				3
Vanessa atalanta				1	1
Aglais io	1	1			2
Aglais urticae	4		2	3	9
Polygonia c-album				1	1
Polyommatus icarus				1	1
Individuen/Begehung	13	11	6	13	43











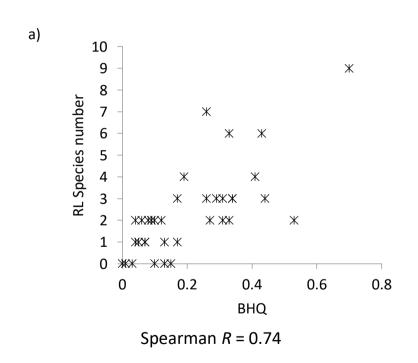


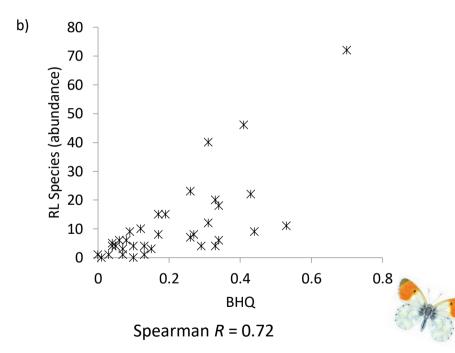
abundance





## **Butterfly Habitat Quality (BHQ) and Red List species (RL)**



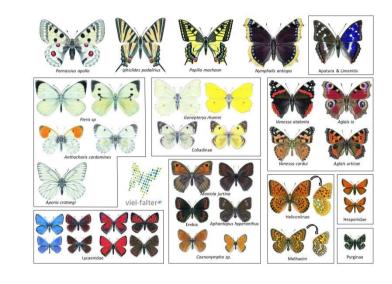




## The explanatory power of the simplified assessment scheme



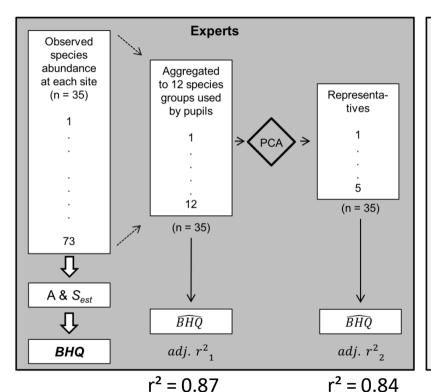
Observed species abundance at each site (n = 35)73 A & S<sub>est</sub> **BHQ** 

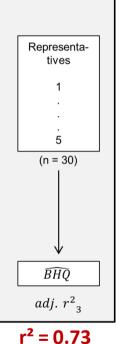




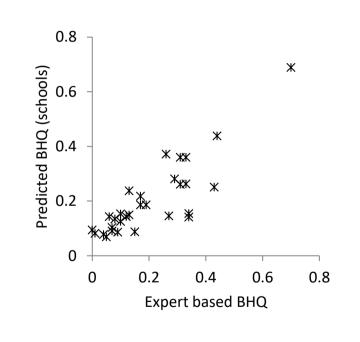
## The explanatory power of the simplified assessment scheme







**Pupils** 



## Can we predict Butterfly Habitat Quality with data collected by pupils?



## Yes, we can!

J Insect Conserv (2017) 21:677–688 DOI 10.1007/s10841-017-0010-3



#### ORIGINAL PAPER

Simplified and still meaningful: assessing butterfly habitat quality in grasslands with data collected by pupils

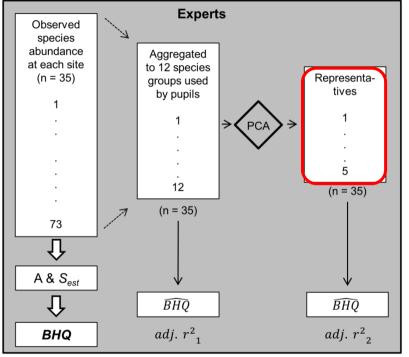
Johannes Rüdisser¹⊙ · Erich Tasser² · Janette Walde³ · Peter Huemer⁴ · Kurt Lechner¹ · Alois Ortner¹ · Ulrike Tappeiner¹.²

Received: 28 November 2016 / Accepted: 28 June 2017 / Published online: 10 July 2017 © The Author(s) 2017. This article is an open access publication

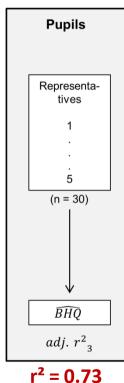
Abstract Public participation in scientific research, method in a citizen science context with laypeople could

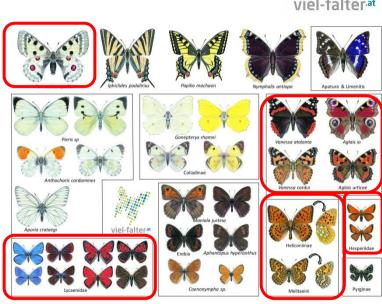






 $r^2 = 0.87$ 





Parnassius apollo, Nymphalinae, Lycaenidae, Heliconiinae & Melitaeini and Hesperiidae



 $r^2 = 0.84$