

13th UIC Sustainability Conference



TRAFIKVERKET

SWEDISH TRANSPORT ADMINISTRATION



VIENNA 2016

Swedish Transport administration's
guidelines about landscape

High biodiversity at railway stations

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12, 13, 14 October 2016

Planetary Boundaries

after Johan Rockström, Stockholm Resilience Centre et al. 2009

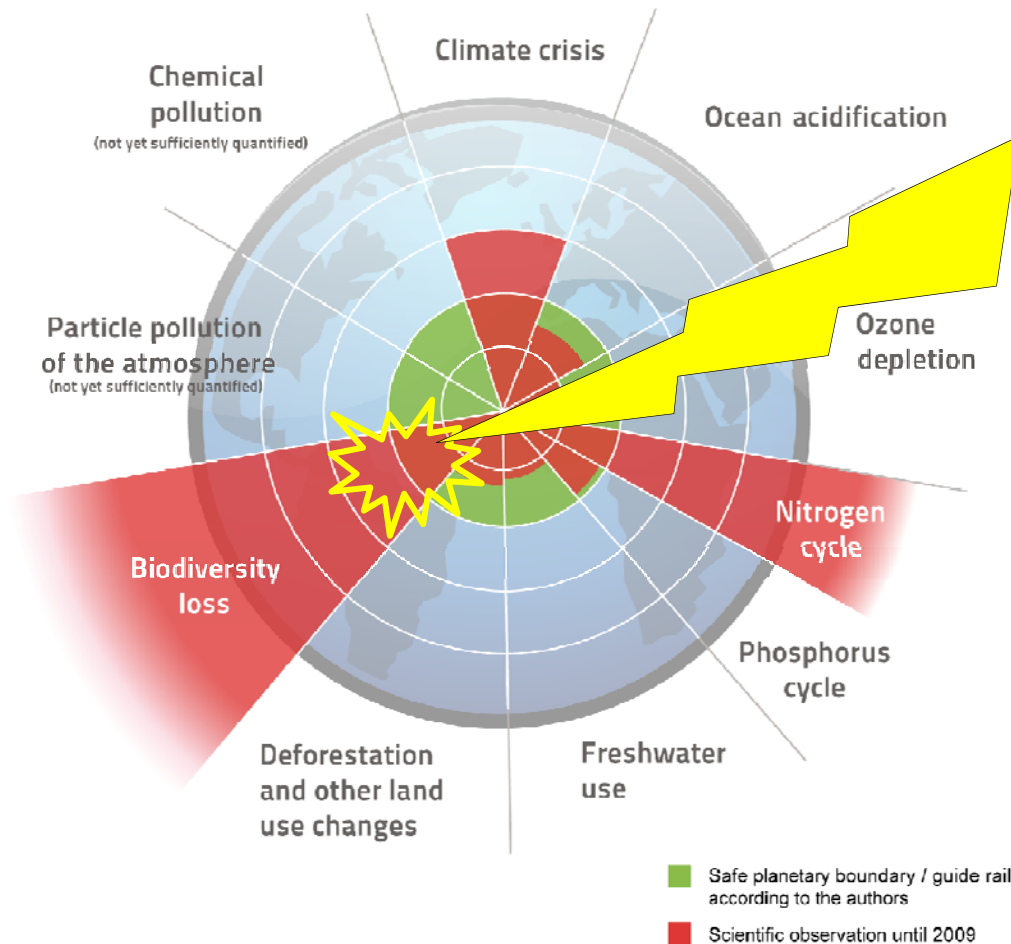
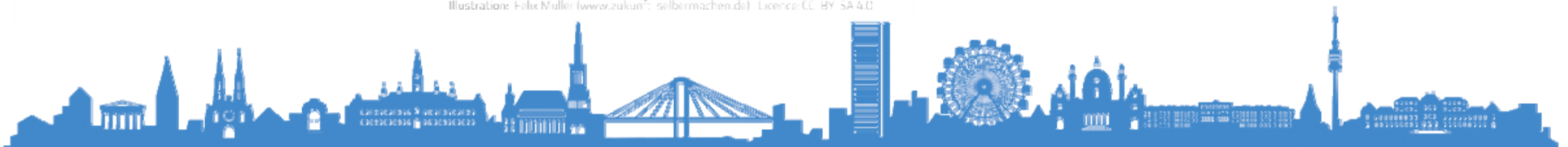


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Where is this boundary for infrastructure?

- How can it be expressed?
- How can it be measured?
- How can it be followed up?
- How do we get there?



Guidelines about landscape



Adapt all transport infrastructure to the landscape;

- Objectives of biodiversity
- Objectives of cultural heritage and cultural areas
- Objectives of landscape form and scale



LANDSCAPE ECOLOGY



LANDSCAPE TIME-DEPTH



LANDSCAPE FORM

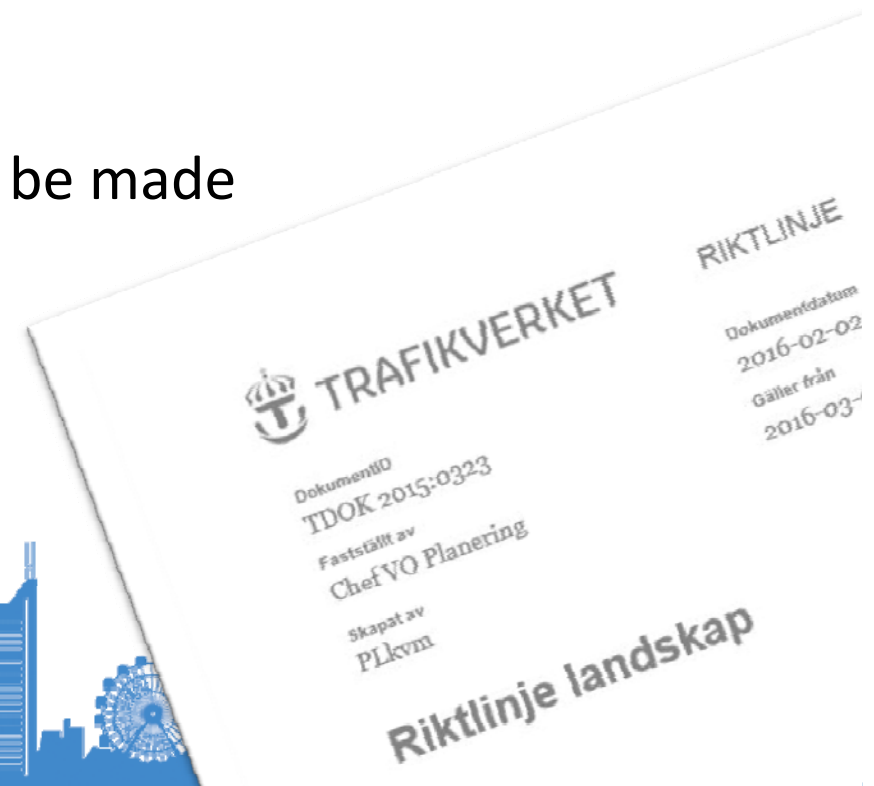


Guidelines about landscape



- Functional requirements that demonstrate the sustainable limits of the infrastructure
- ...not how the infrastructure should be designed

A new version of the guidelines is to be made before the end of 2016.



Biodiversity objectives

Contain sustainable boundaries for the infrastructure within four areas:



1. Safe passages for animals (*barrier and mortality*)
2. No traffic noise in important habitats (*disturbance*)



3. Avoid habitat loss, maintain, strengthen and add new species-rich habitats in the infrastructure (*connectivity*)
4. Prevent and control alien invasive species



Within each of these four areas we have set demands that contains



Knowledge (*database*):

- The needs for measures in the existing road- and railway network
- Location, design, description of contents, status and so on for measures taken
- Actions taken, when, priority etc

Outcome-based specifications for new constructions of roads and railways

- Methods decided and published

Outcome-based specifications for maintenance

- Methods decided and published

Indicators or methods to be used in measurements



Exampels



Safe passages for animals

For new construction and renovation of roads and railways the infrastructure shall provide safe passages for large mammals if:

- a. Roads has an annual average daily traffic of 4000 and the speed is over 80 km/h
- b. Railway with over 120 vehicles/day
- c. Roads and railways are fenced

Avoid habitat loss, maintain, strengthen and add new species-rich habitats in the infrastrucure

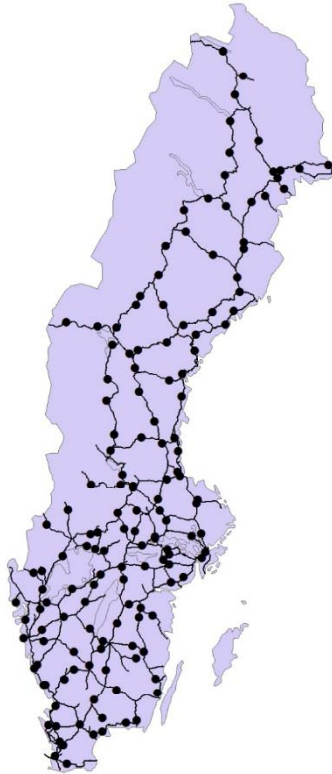
For new construction of infrastructure, every side surface shall be designed with the aim to create/recreate an environment according to the prevailing geological and ecological conditions in the surroundings.



High biodiversity values in biotops at railway stations



Railway in Sweden



- 14 000 km railway
- 1 400 railway stations





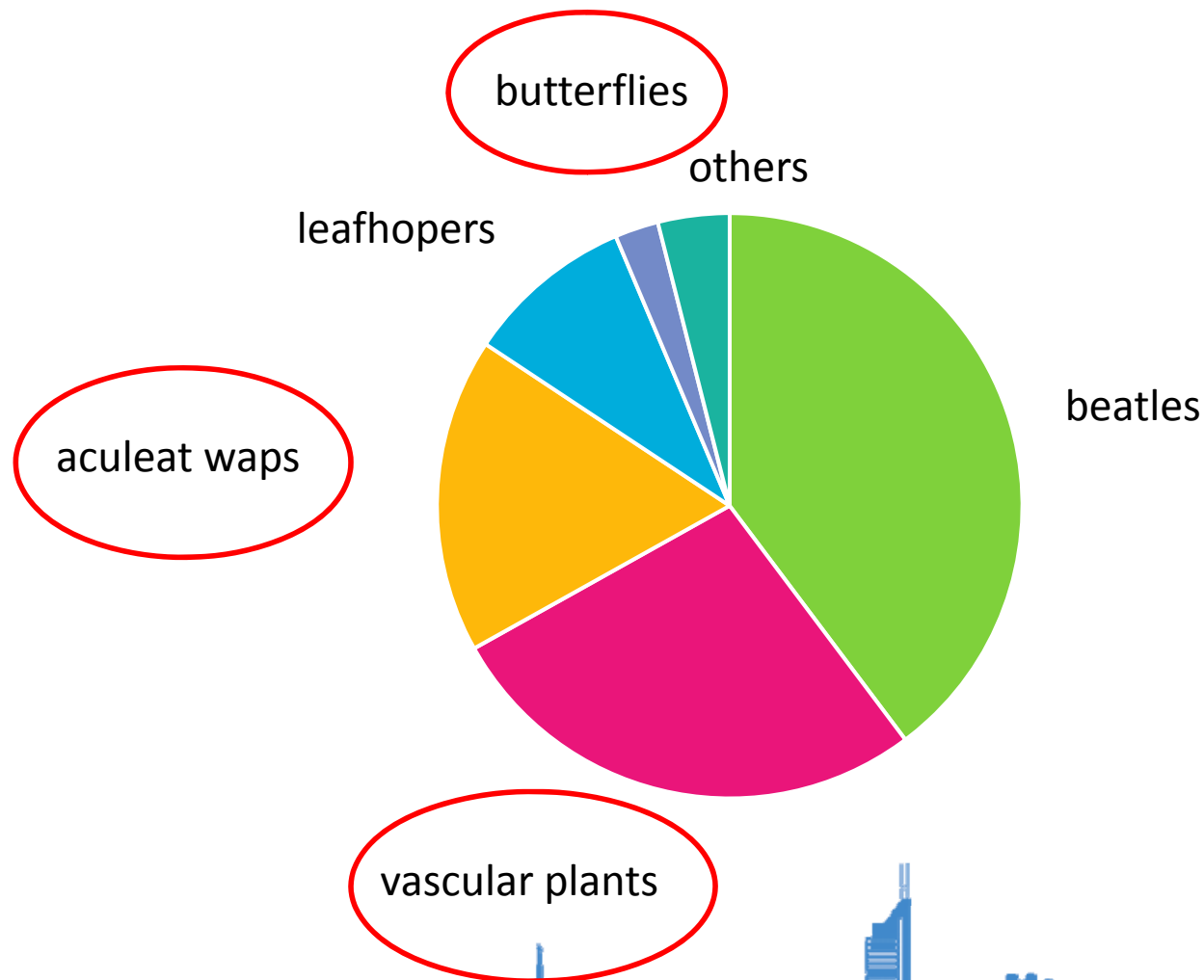
Inventory of all speacies of vascular plants and insects at 250 stations

- About 2,400 species
- About 100 red-listed species

Conclusion:
High biodiversity at railway stations



Taxonomy from species inventory



Species found in railway habitats

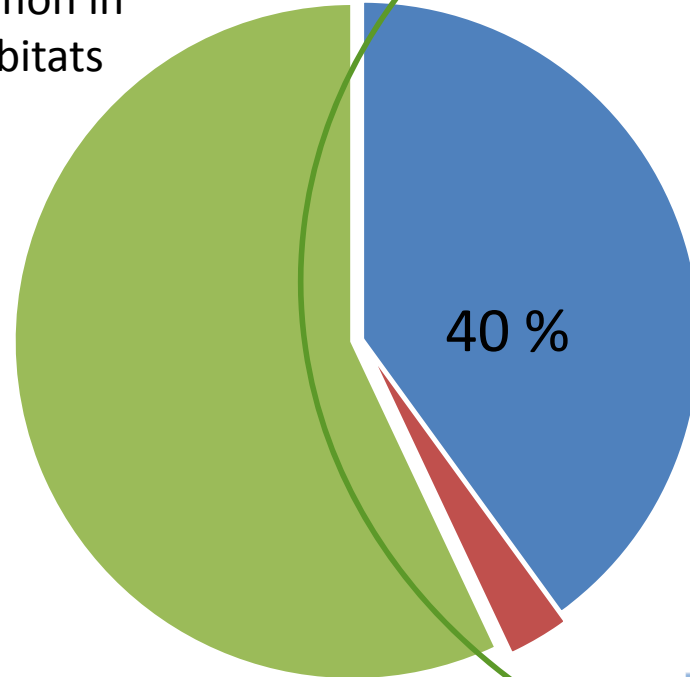


Non-railway
associations

Equally common in
other dry habitats

Railway associated
species

Species common
in railways
habitats
but scarce in
other dry areas



Relying on railway habitats
Exclusive for railways or
Railway habitats essential for
national survival
Often migrating along
railways



Specific nature conservation values for railway environments



- Habitat
 - Kidney vetch/bluebell
 - Together with sand area



- Geological conditions
 - limestone
 - Sunlit lime rock



- Structures
 - Ruderal land, open sand, weathering platform



- Species
 - rare, red listed

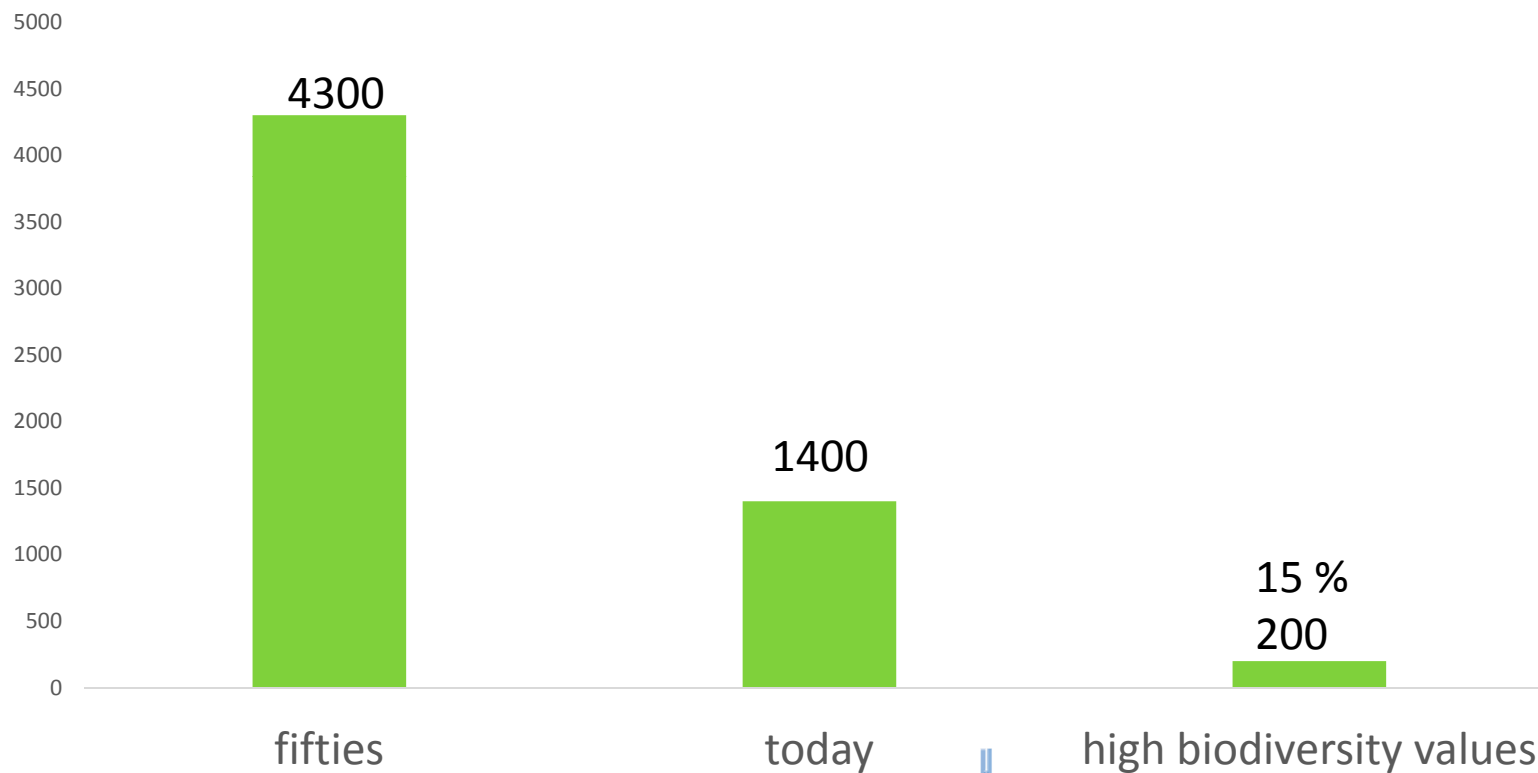


An overall classification

- Classifies railway stations into 5 classes
- Fully compatible with newly accepted SIS-standard for biodiversity evaluation in Sweden



Stations with high biodiversity values





- Identified 80 stations with high biodiversity values (class 1,2 and 3) today
- Still 20 % stations to inventory at the field



Problems with overgrowth



Hagström 1901

110 years later



Hagström 2011



Restorations



Remove shrubs

Restored 26 stations



Remove soil with humus



Add sand



I have many questions



- What kind of works is going on in other countries?
- What nature conservation issues are you dealing with?
- What kind of problems do you have
exampel restoration?



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