Schweizerische Eidgenossenschaft
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Federal Departement of Economic Affairs DEA
Federal Office for Agriculture FOAG

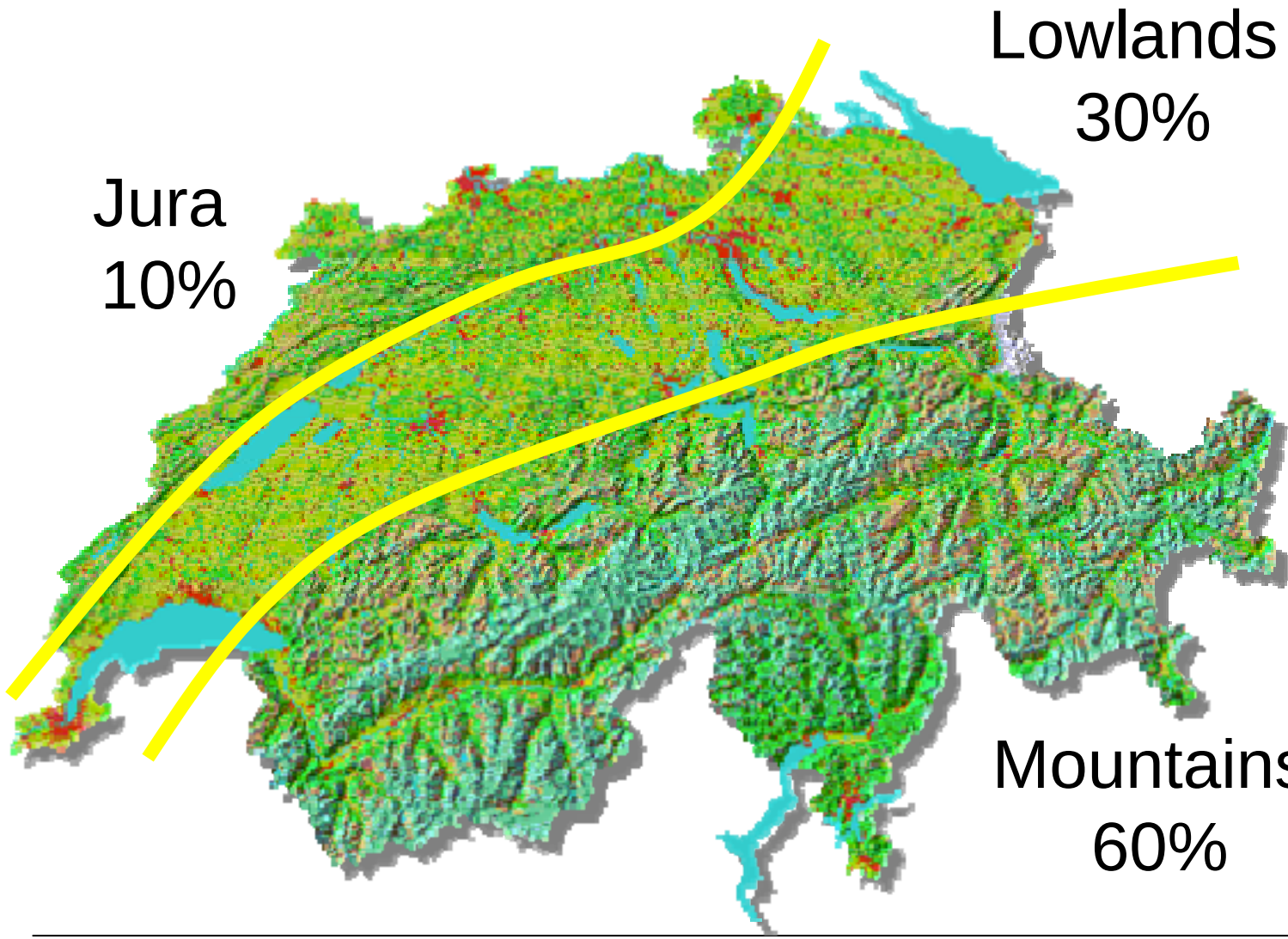
High Nature Value Farmland in Europe, Conference in Vilm, 14th – 18th June 2010

HNV farmland in Switzerland

Agriculture and biodiversity
Current situation & trends

Erika Loser
Swiss Federal Office for Agriculture

Swiss agriculture

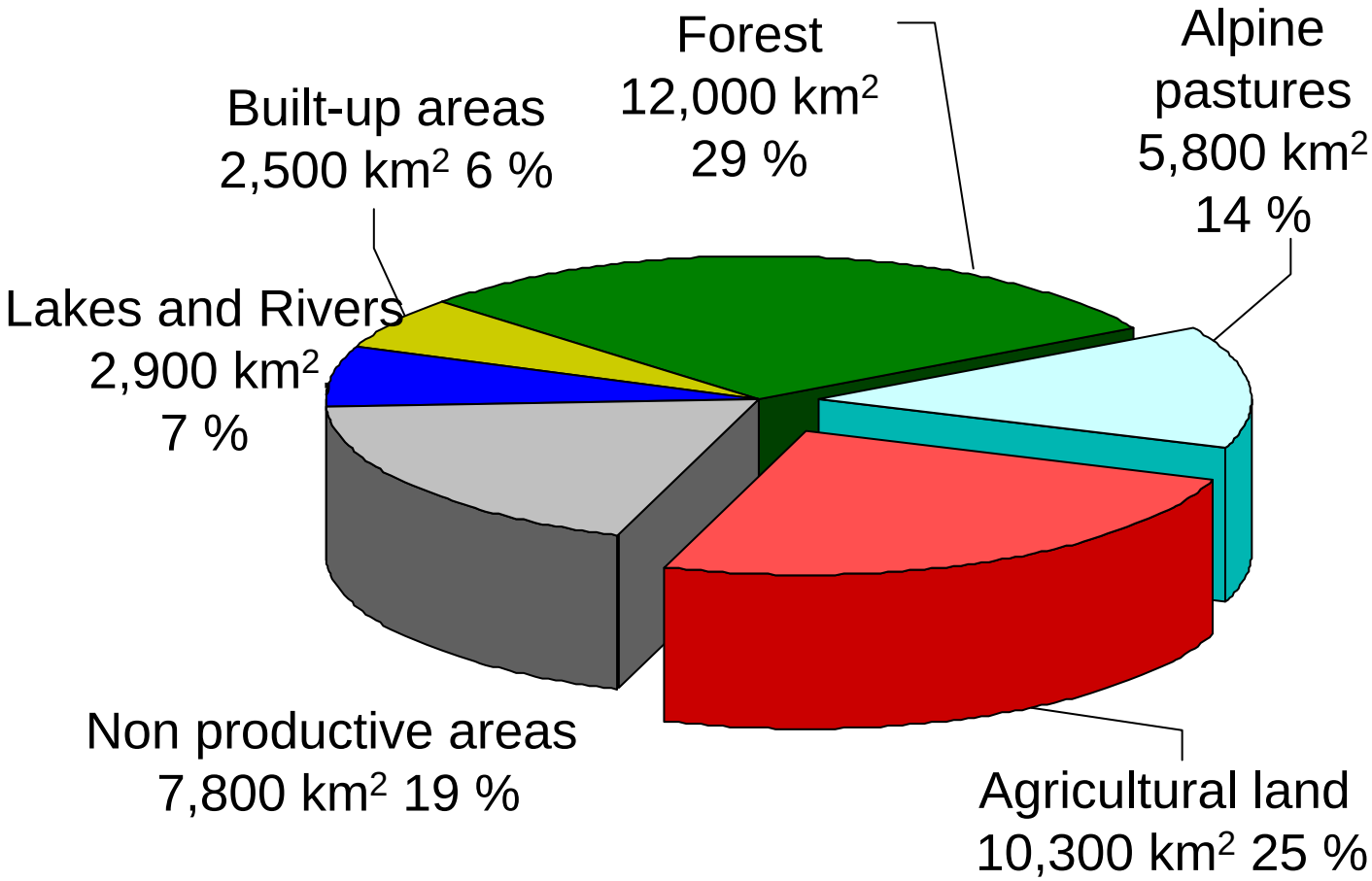


High nature value farmland in European countries: e.g.Switzerland

The Swiss political approach to ensure ecological compensation in agricultural landscape, Erika Loser, BLW, 17.06.2010

Facts and figures

Area



Facts and figures: current situation

Agricultural Production

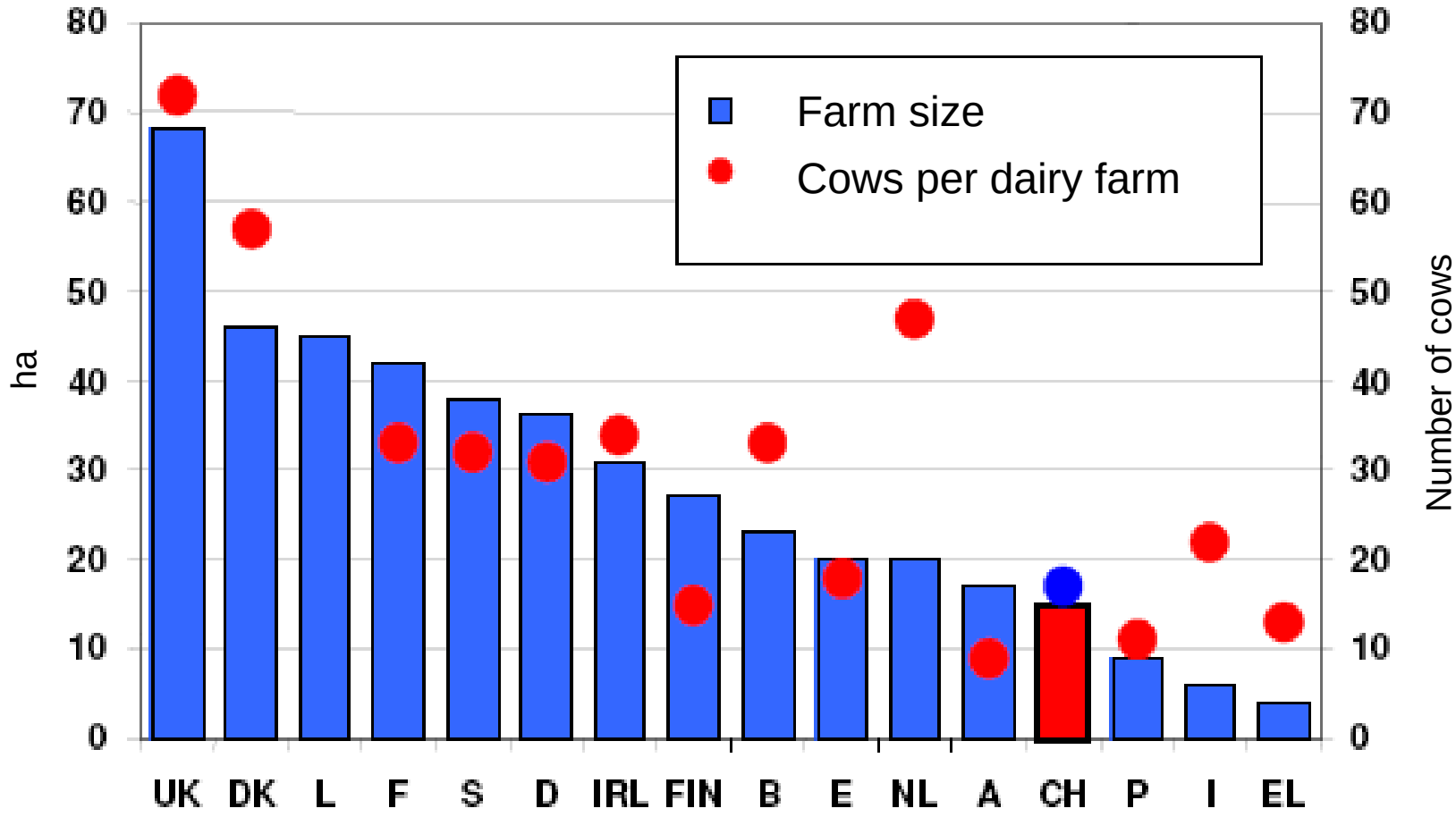
- 1.0 million ha agricultural land (about 75% grassland)
- 0.6 million ha alpine summer pastures
- 64 000 farms (60% full-time)

Degree of self-sufficiency (joules)

• Vegetal products	41 %
• Animal products	94 %
• Total	59 %

Facts and figures: current situation

Swiss agriculture: Structure



Habitat changes and trends

Mires

1800:	250‘000 ha
1900:	190‘000 ha
Today	**30‘000 ha**

→ Area declined by 85%

From 1997/2001 to 2002/2007:

- Mire area declined by 1%,
- plus decrease in mire quality
  - dryer,
  - more nitrogen indicator plants

Habitat changes and trends

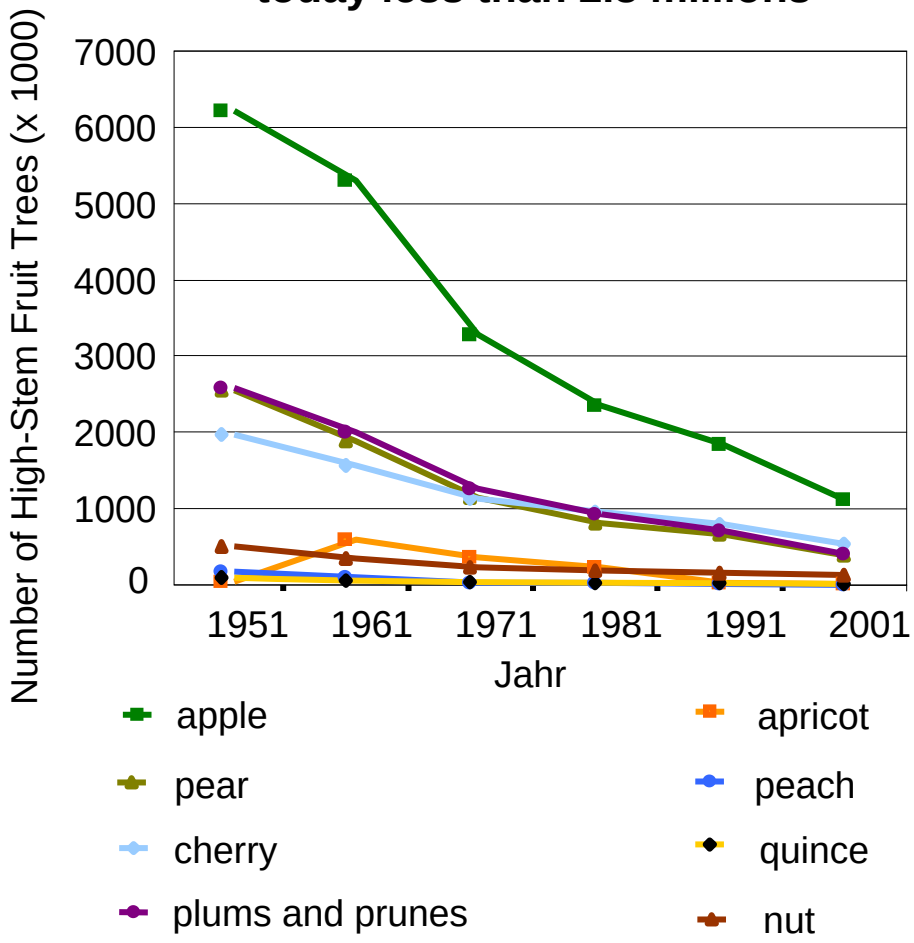
Dry meadows and dry pastures

1900: 760‘000 ha
Area declined by 25-30% between 1980 and 1995/2005
Today: 37‘000 ha
(Since 1900 decline by 95%!)

Habitat trends: Traditional orchards

2001 2.9 millions of trees;

today less than 2.3 millions



Habitat changes: landscape structures


Münstertal 1972 and 2002




Tafeljura BL 1971 and 1996

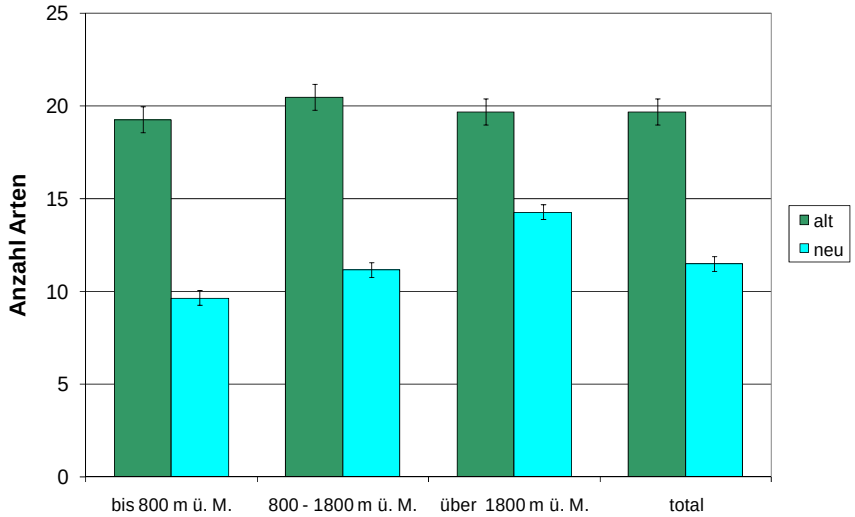
11 years of land amelioration: Evolution of semi-natural habitats Wintersingen 1983/1994

Extensive meadows	-71%
Stone heaps	-67%
Cavities	-67%
Ditches	-63%
Stone walls	-50%
Fallow land	-48%
Moist patches	-41%
Dolines/sinkholes	-40%
Flowering meadows	-35%
Terraces	-35%
Shrubland	-32%
Structured forest edge	-30%
Little valleys	-17%
Hedgerows	-13%
Rivers	-9%
Tracks	-7%
Solitary trees	-3%

Changes in species diversity

Vascular plants in meadows and pastures

- In the last 120 years, the number of species by square meter has decreased by 50%. The number of indicator species for ecological quality has dropped to one third.
- Today we need a surface 120 times larger to find the same number of species as 120 years ago.

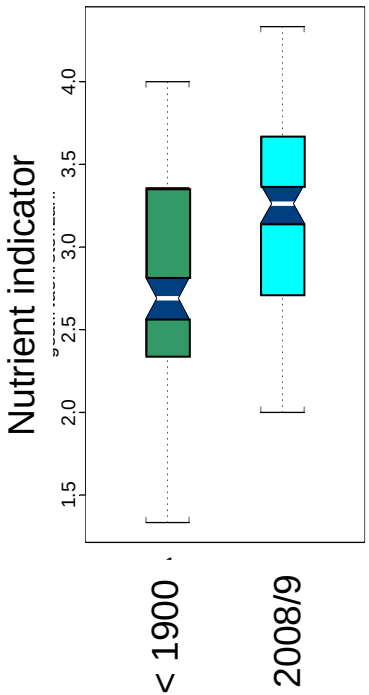


Changes & trends in species diversity

MAA1

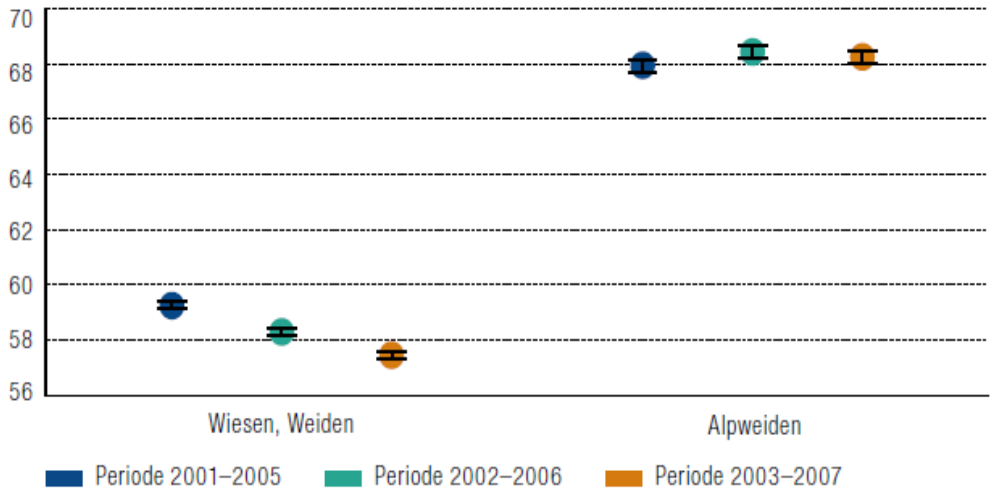
Vascular plants in meadows and pastures

- Nutrient indicator plants continue to increase. Swiss meadows and pastures are losing their diversity.



Source: N. Richner

Index diversity of plant communities



Source: Biodiversity Monitoring Switzerland

MAA1

Nutrient indicator?

Anita Maric Fasel; 02.06.2010

Changes and trends in species diversity

Ruderal plants / Segetal flora

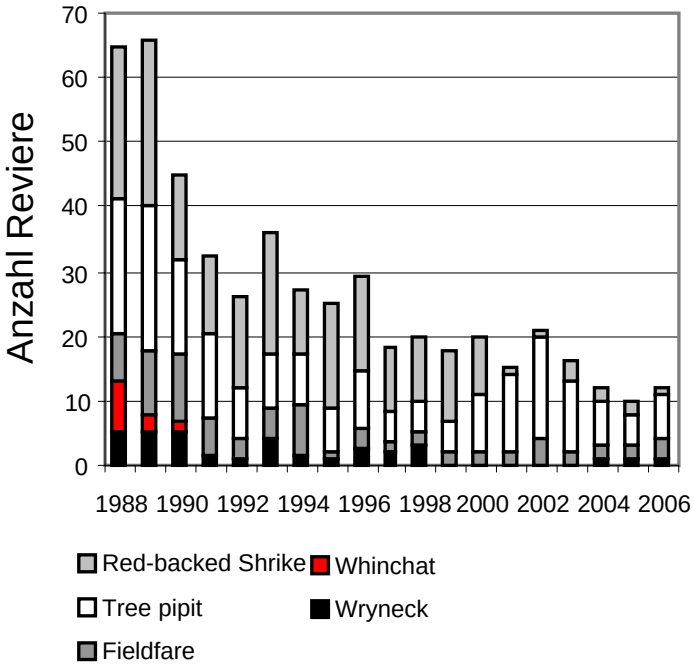
- Out of 743 ruderal plants, 42 % are endangered.
- From 1991 to 2002, the threat increased for 30 % of them.
- Cross compliance has led to lower degree of threats in 6% of species living in crop
- Permanent soil cover in vineyards reduces erosion but affects floristic diversity

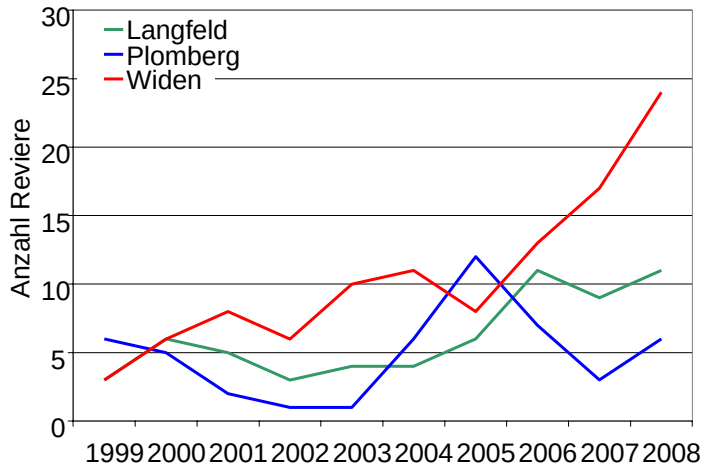
Sources: Moser et al., Landolt, Fotos: ART; Markus Jenny

Trends in groups of organisms

Birds

- Swiss Bird Index has been stable since 1900
- Winners: Yellowhammer, rook
- Losers: Tree pipit, skylark, whinchat
- regional and local differences may be important



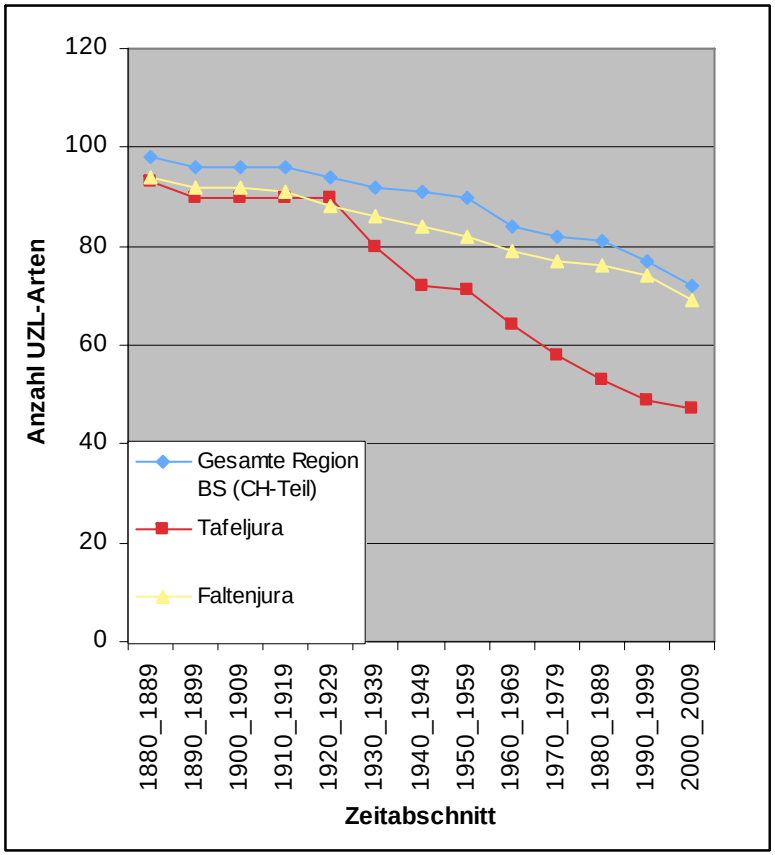


The Red-backed Shrike profits of agro-environmental schemes, Klettgau

Source: Sierro et al.; Swiss Ornithological Institute

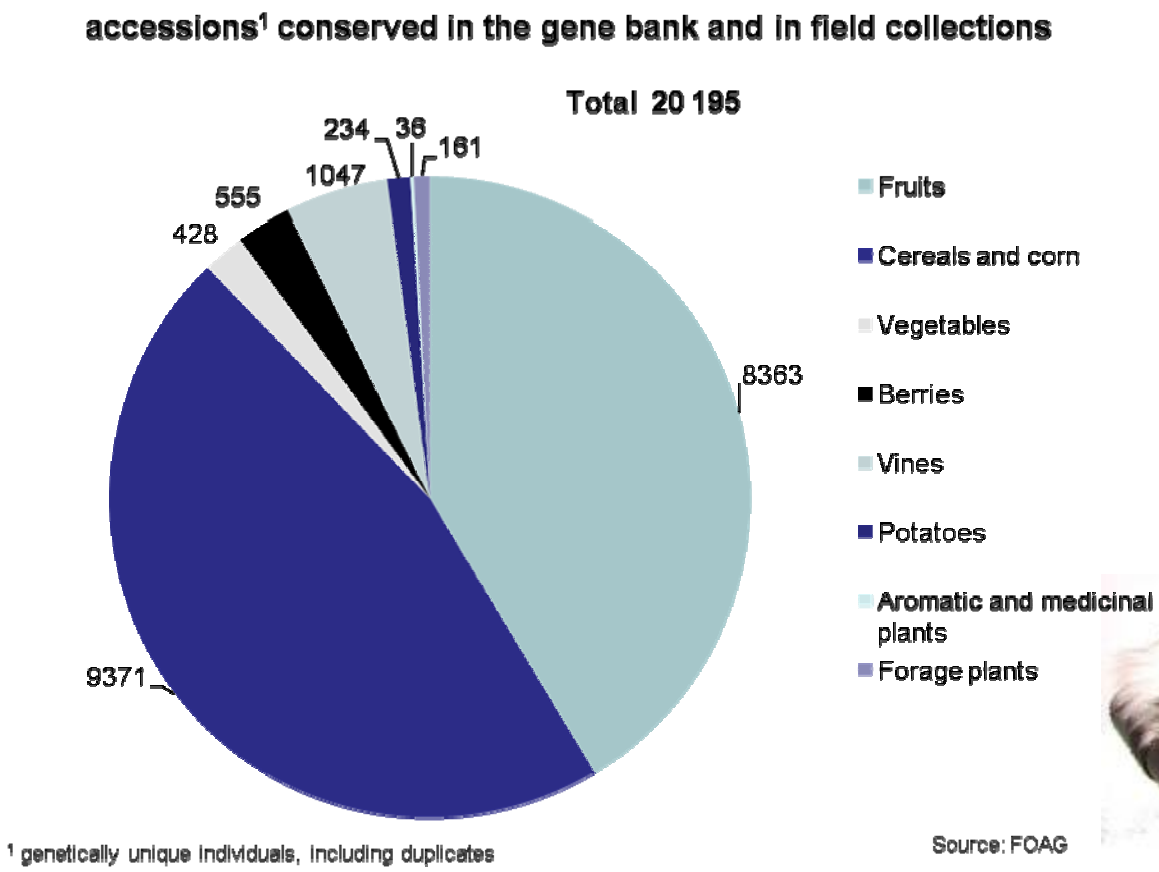
Changes and trends in species diversity

Butterflies in the region of Basel
→ regional biodiversity is still decreasing



Source: Altermatt et al., Walter et al., picture: K.Schneider

Varieties and breeds: positive trends



for livestock and most crops

→ Loss trend stopped / breed diversity is increasing

High nature value farmland in European countries: e.g.Switzerland

The Swiss political approach to ensure ecological compensation in agricultural landscape, Erika Loser, BLW, 17.06.2010

Biodiversity changes in Swiss agricultural areas: Changes and trends

	1900-1990			1991-2010		
	ML	Jura	Alps	ML	Jura	Alps
habitats						
Arable land	↓			↓↑		
Grassland	↓			↓		
Dry meadows and pastures	↓	↓	↓	↓	↓	↓
Wet meadows and pastures	↓	↓	↓	→	↓	↓
Vineyards	↓			↓		
Traditional orchards (n° of trees)	↓			↓		
Hedge (length)	↓	↓	↓	↑	↑	↑
Groups of organisms						
Birds	↓	↓	↓	↓→	↓	↓
Butterflies	↓	↓	↓	↓	↓	↓
Grasshoppers	↓	↓	↓	↑	↓	↓
Segetal flora of ruderal places	↓	↓	↓	↑	↑	→
Flora of dry meadows and pastures	↓	↓	↓	→	↓	↓
Flora of wet meadows and pastures	↓	↓	↓	↓	↓	↓
Flora of productive meadows	↓	↓	↓	↑	↑	↓
Varieties and breeds						
Varieties&cultivar		↓			↑	
Livestock breeds		↓			↑	

Source: Walter et al.

Biodiversity changes in Swiss agricultural areas : changes & trends

-1900-1990: Sharp decline of biodiversity on almost all levels and in all regions

→starting from a very high level of biodiversity

-1990-2010: slower decline on most levels

→starting from a mostly low to medium level in the Jura Mountains and in the mountain areas

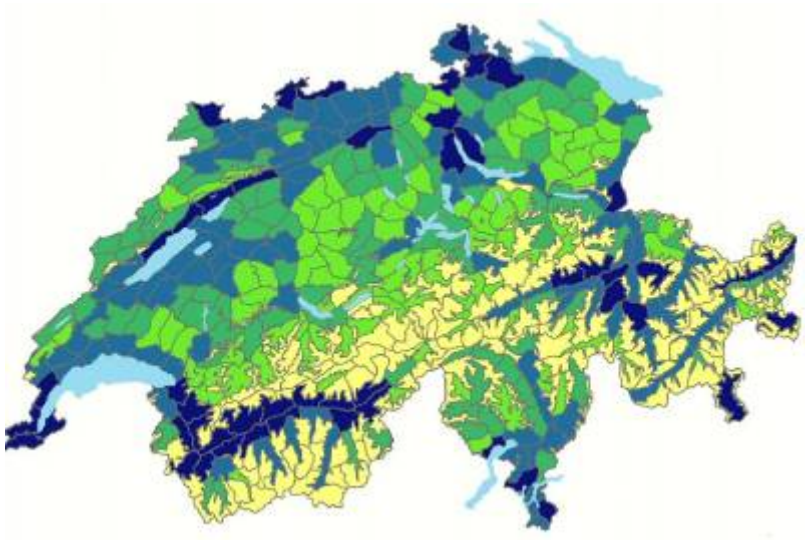
-1990-2010: moderate positive development in the Central Plateau

→from a very low to a low level

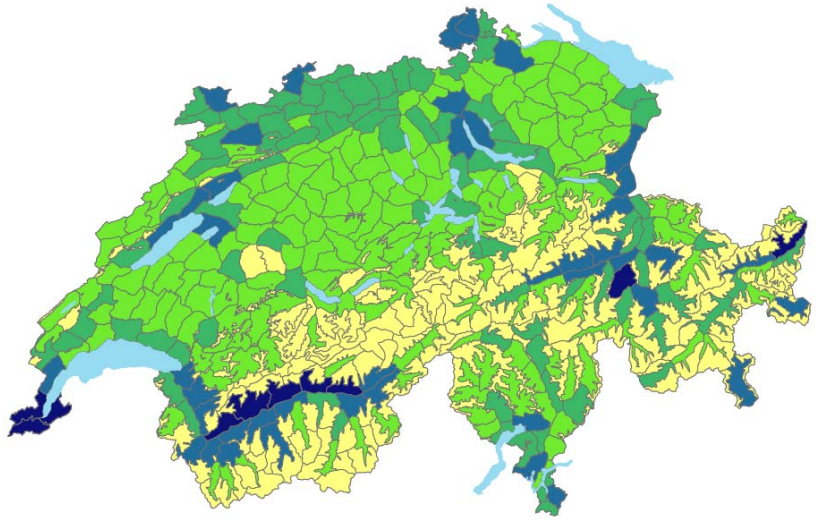
Positive development in the trends of conservation of varieties and breeds

Quelle: Walter et al.

changes in Swiss agricultural landscape: diversity of species related to agriculture



Historical situation (19th-20th century)
Largest species diversity
next to alpine meadows and pastures
in climatically mild valley systems



Current situation: (data from 1982)
Biggest losses of species diversity
observed in the Central Plateau and S-Tessin; urban agglomerations function as substitute habitats

→ areas of deficit: potential for promotion

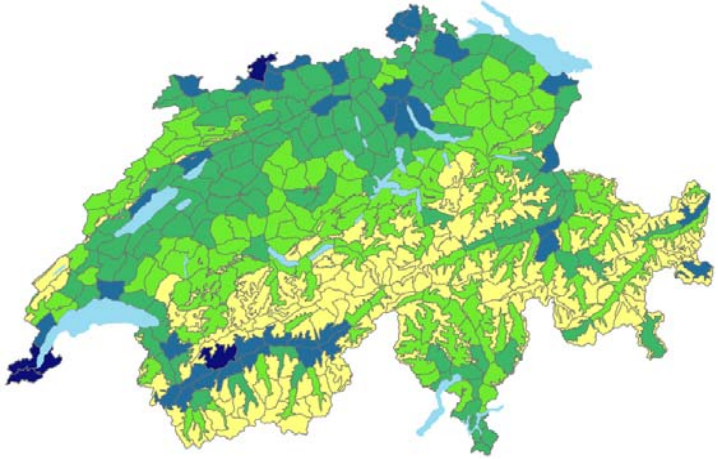
Source: WWF&Birdlife CH 2009

The swiss agriculture regions with high nature value, NGO-study 2009

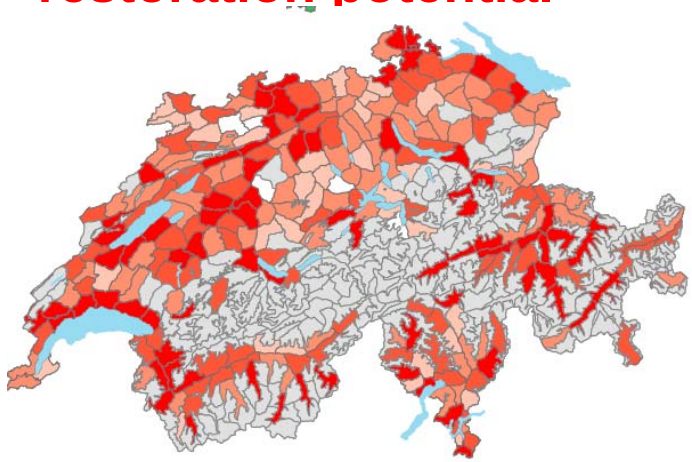
- → Base: Flora- and Fauna-data (from national databases)
- → Selection of species related to agriculture (derived from data on ecological and habitat preferences, expert assessments)
- → Groups of organisms: phanerophyta 1518, pulmonata 8, odonata 36, orthoptera 68, neuroptera 2, lepidoptera 186, hymenoptera 84, coleoptera 30, amphibia 11, reptilia 10, aves 45, mammalia 4 species analysed
- → totally 1‘100‘000 observations analysed
- → Point data clustered in biogeographic sectors (Welten & Suter 1982)
- → sector value: weighted sum of species present in the sector (depending on link to agriculture and endangerment and international responsibility of Switzerland)
- → Historical situation → current situation=only recent data (>1982)

Biodiversity in Swiss agricultural landscape

arable land: current situation

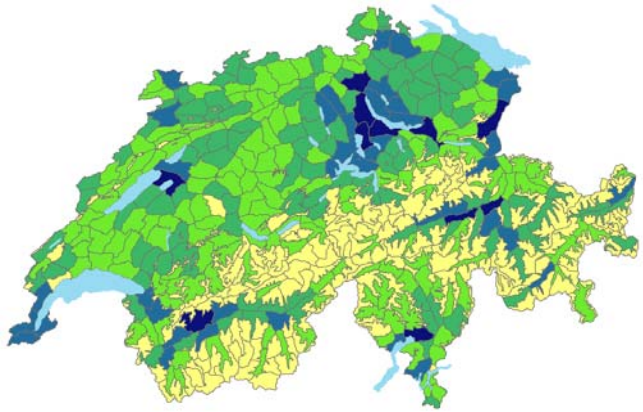


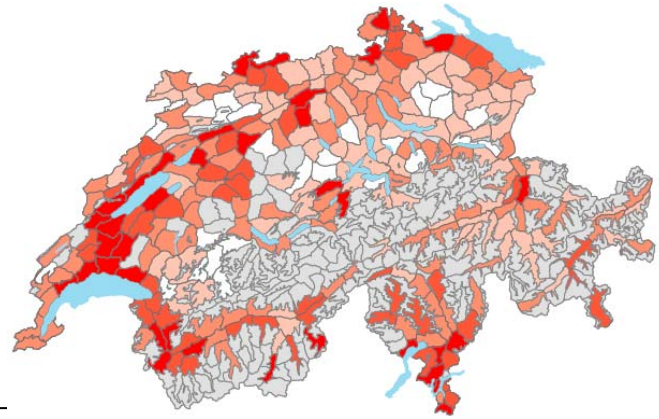
restoration potential



→ areas of deficit: potential for restoration/promotion

Species connected to humid meadows and pastures





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Outlook : Swiss HNVF data how to achieve compatibility with the EU?

- Selection of relevant land cover classes (Corine) → for CH (problems with arable land, all? vineyards, greenland*?)
- (Refinement of the drafts of land cover maps with expert rules)
- Addition of biodiversity data layers with European coverage
  - → Natura 2000 network
  - → Important Bird areas IBAs
  - → Prime Butterfly areas IPAs
- Addition of national biodiversity data sets
  - → Inventory of fens and of dry meadows/dry pastures
  - → mire landscapes of national importance
  - → Alluvial zones and → others?
- Up-scaling of the original data to a suitable level of detail

  → polygons illustrated e.g. in 1 km2-grid (Czechoslovakia)

Policies and Instruments to preserve HNVF in Switzerland based on the Federal Law on the Protection of Nature and Cultural Heritage :

Protection and maintenance of nature and lands-cape with central governmental financial contribution

- Biotopes of national and regional importance (dry grasslands 43%, fens 40%, amphibian sites 67% and alluvial zones 2% on agricultur. land; totally <10% of agricultural land)
- Protection of species

→ Not restricted to agricultural surfaces

→ Implementation only partly successful or satisfying

Policies and instruments to preserve HNVF in Switzerland based on agricultural law:

Bis 1992	• no explicit promotion of biodiversity or HNVF • no measures for conservation of genetic resources • land ameliorations: no specific measures
1993	Promotion of **cross compliance** ecological compensation areas (**ECA**)
1997	**NAP-PGREL** Conservation and utilization of **plant genetic resources for food and agriculture**
1999	Measures for animal genetic resources
1999	**PEP**: minimal 7% resp. 3.5% **ECA** per farm
2001	Introduction of the **Ordinance on Eco-Quality**: promotion of biological quality & interlinking
2008	**Environmental objectives for agriculture UZL**
2009	Concept development of direct payments **WDZ**
2009	UZL-Operationalisation project starting

Concept WDZ (development of direct payments)
Contributions/measures for biodiversity

Type	Ausgestaltung	objectives
BFF-contribution (Quality and interlinking) BFF = Biodiversitätsförderfläche	Permanent payments for BFF-Types per ha agricultural land & alp. zone (incl. law of nature protection)	Conservation and promotion of biodiversity and habitats (including bio-topes of nat. importance)
Improvement measures	Single payments for specific measures	Achieve the necessary level of quality
Species promotion measures	Single and permanent payments for specific measures	Promotion of demanding target species
Functional biodiversity on production area	Permanent payments per ha, „hole farm approach“ (e.g. „Bio“)	Promotion of soil fertility and ecosystem services

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Concept WDZ

Art. 104 BV
Aliment.safety
Culturated landscape
Decentralized population of the country
Maintenance of natural ressources
Promotion of environment- and animal-friendly production types

Contributions for adaptation
→ Making the development socially reliable/supportable


Foto: H. Schiess

Contributions for cultur. landscape
→Offenhaltung als Basis
→Ausgleich Erschwernis
→Förderung der Sömmerung

Contributons for „alimentat" safety
→Erhaltung Produktionskapazität
→Ausgleich Erschwernis
→Förderung Ackerbau und strategisch wichtige Einzelkulturen

Contributions for biodiversity
→Erhaltung und Förderung der Arten-vielfalt und Vielfalt der Lebensräume
→Aufwertung und Artenförderung
→Förderung funktionale Biodiversität

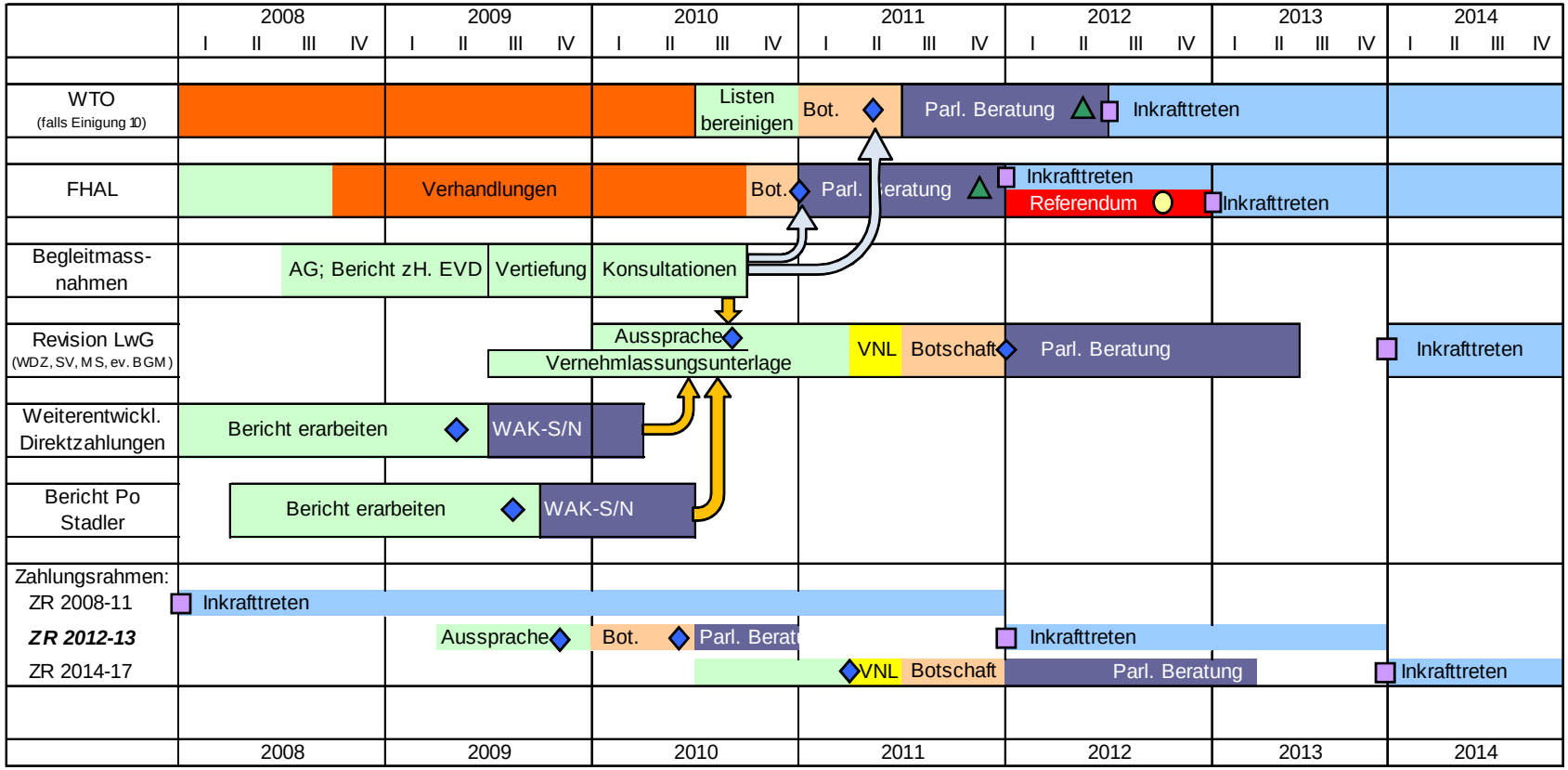
Contributions for landscape quality
→Erhaltung, Förderung und Weiter-entwicklung vielfältiger Landschaften

Contributions for animal wellness
→Förderung besonders tierfreundlicher Stallhaltungssysteme und des regelmässigen Auslaufs im Freien

Proof of ecological performance PEP

Structural and social base criteria (Eintretens-/Begrenzungskrit.)

Development of agriculture policy



Legende:

- Verhandlung
- Vorarbeiten Verwaltung
- Vernehmlassung
- Botschaft
- Parlament
- Referendum und Volksabstimmung
- Umsetzung
- Bundesratsbeschluss
- Parlamentsbeschluss
- Volksabstimmung
- Inkrafttreten

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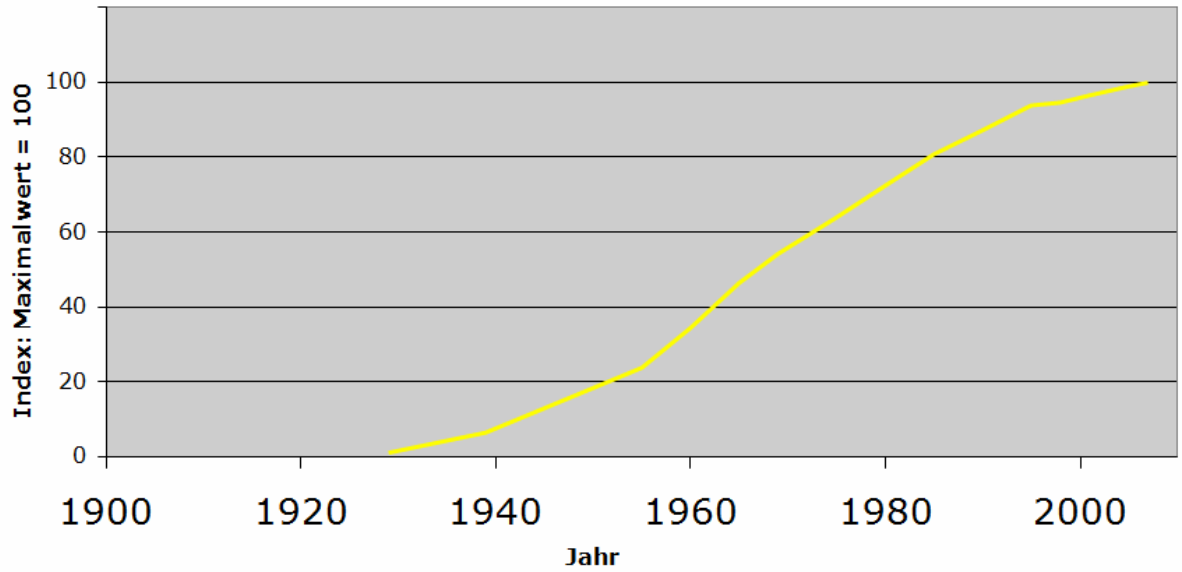
Thanks for your attention!

Trends in the agricultural sector

Area used for agricultural purposes: 1901/1997: **-32%**
2‘240‘000 ha / 1‘530‘000 ha

Number of employees in agriculture :1905/2007:**-75%**
700‘000 / 173‘000

Average farm size 1905/2007: **+325%**
4 ha / 17 ha



Evolution of some key numbers in the agricultural sector

Dairy cows, milk production 1905/2007: -4% **+115%**
740‘000 / 710‘000, 1.8 Mio. t / 3.9 Mio.

Number of pigs 1901/2007: **+190%**
550‘000 / 1‘600‘000

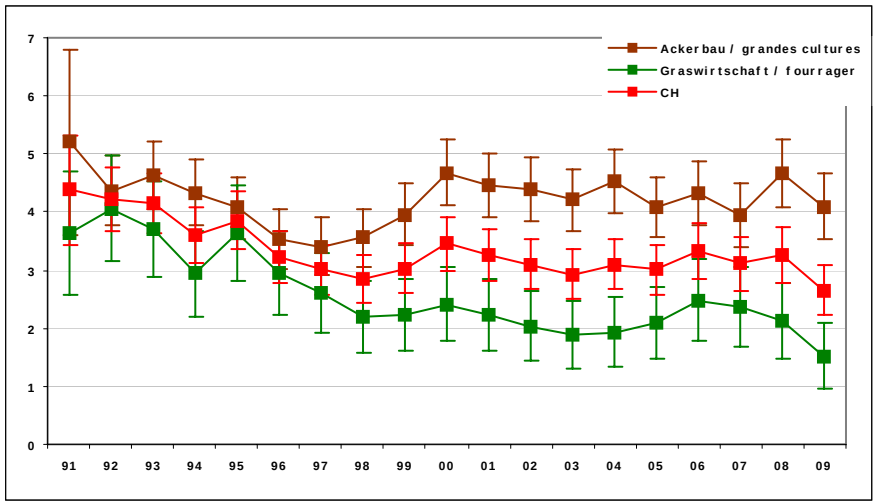
Number of goats 1905/2007: **-77%**
350‘000 / 80‘000

Number of sheep 1905/2007: **+100%**
220‘000 / 440‘000

Changes in groups of organisms

Mammals

The numbers of ermines and weasels have greatly diminished. Hares have benefited from ECA in arable areas, but in food growing areas their numbers decline. The hare densities (3 individuals/100 ha) is still very low and below the density necessary for hunting practices, according to the estimations of biologists (15-19 individuals/ 100 ha).



Source: J. Fischer, Swiss Ornithological Institute, picture: M. Jenny