Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Bundesamt für Umwelt BAFU
Office fédéral de l'environnement OFEV
Ufficio federale dell'ambiente UFAM
Federal Office for the environment FOEN

Size of Secure Protected Areas

Legally binding protection turns nature preserves into valuable long-term instruments of nature conservation. However, there is no guarantee that protection on paper will in fact result in effective protection for the plants and animals designated nature preserves are supposed to shelter.

Based on implementation monitoring of federal habitat inventories (for alluvial plains, fenlands and bogs, amphibian spawning areas and dry grassland), the M2 indicator reveals the extent to which cantons implement federal legal protection at a cantonal level. As polled by the Federal Office for the Environment FOEN with cantonal nature conservation offices in 2010, data shows all federal inventories continuing to be hampered by shortfalls in implementing conservation regulations.

Status: August 2011

Contents

Situation in Switzerland and in the regions

Introduction

Listing an area in one of Switzerland's federal habitat inventories is no guarantee that the area will actually be protected in real life. For nature conservation to be effective, cantons must implement protection measures in actual fact, alternatively by delegating implementation to individual communities. For example, it is of vital importance that cantons precisely demarcate protected areas—usually drawn to a scale of 1:25,000 in federal inventories—and, if necessary, establish buffer zones, adopt well-targeted protective regulations that are binding for landowners, and make sure that such regulations are observed. Using suitable implementation monitoring, the federal government may verify in which manner and to which extent cantons effectively enforce nature conservation for protected areas. Based on such implementation monitoring, the M2 indicator observes legal enforcement of federal conservation measures by the cantons. While data regarding fenlands/bogs and alluvial plains had been polled separately since 1994, the federal government conducted a joint poll using a uniform questionnaire for all federal habitat inventories in 2010 (see table 1 below). However, methods applied in 2010 differed greatly from those used in the past, particularly from the 2006 poll that provided the data reported in the first version of the M2 indicator, making it impossible to compare results. Hence, the current version only discusses data captured by the 2010 poll. For details on questions asked and possible answers please refer to "Surveying methods" on page 29.

Except for shifting amphibian spawning areas (site data only, therefore lacking a defined surface area), poll results are published in the form of size-based percentage points. Furthermore, percentage values are broken down for Switzerland as a whole and individual biogeographical regions. This calls for discerning interpretation, as "100% of fenlands", for example, refers to 13,431 hectares in the Northern Alps, but merely 111 hectares in the Western Central Alps (see table 1).

For the location of protected areas please consult the FOEN's ECOGIS application (as of 2012: map.bafu.admin.ch).

Tab. 1: Size of protected areas of national importance (in hectares)

	Alluvial plains	Fenlands	Raised bogs and transition bogs	Amphibian spawning areas (stationary)	Dry grassland
Jura	352	461	438	1,577	4,374
Central Plateau	6,839	3,536	111	8,896	461
Northern Alps	5,297	13,431	877	1,785	6,867
Western Central Alps	3,421	111	8	160	2,511
Eastern Central Alps	4,295	1,366	64	180	5,807
Southern Alps	2,435	313	25	1,283	1,379
Nationwide	22,639	19,218	1,524	13,886	21,398

Interpretation example
In 2010, the Federal Inventory of Alluvial Plains held protected areas of national importance covering 22,639 hectares nationwide, with 2,435 hectares located in the "Southern Alps" biogeographical region.

Overview of results

Differentiated by habitat type, table 2 below shows the nationwide share of protected areas benefiting from protection that is legally binding for landowners, and the share of areas for which cantons consider implementation of nature conservation to be completed. Except for shifting amphibian spawning sites, where percentages refer to the number of sites, percentages indicated are based on the size of protected areas (see pp. 20, 24).

Tab. 2: Legally binding protection and implementation status (in %)

	Protection legally binding for landowners			Implementation completed		
	yes	no	no data	yes	no	no data
Alluvial plains	82	11	7	55	45	0
Fenlands	95	4	1	72	9	19
Raised/transition bogs	94	3	3	89	11	0
Dry grassland	25	75	0	18	69	13
Stationary amphibian spawning areas	93	6	1	69	15	16
Shifting amphibian spawning sites	73	27	0	57	12	31

© BDM (M2 indicator). Data source: FOEN. Status: 2011

Interpretation example
82% of alluvial plains are covered by protection that is legally binding for landowners. However, cantons consider the implementation of that protection to be completed—i.e. fulfilling federal requirements—for only 55%.

Comments
For implementation to be completed, protected areas need to be precisely demarcated, with conservation and maintenance measures regulated according to legal requirements. What strikes the eye is the discrepancy between protection that is legally binding for landowners, and the extent to which implementation is considered to be completed. Ideally, both percentages would be identical, but they are not. While many protected areas are covered by protection that is legally binding for landowners, conservation and maintenance measures are not judged to be sufficient by cantons, compelling them to admit that implementation has not been completed yet.

It must be noted that legal implementation deadlines have largely expired, except for dry grassland areas. However, implementation is far from being completed. Shortfalls are smallest as regards raised bogs and transition bogs, and biggest as regards alluvial plains and shifting amphibian spawning sites.

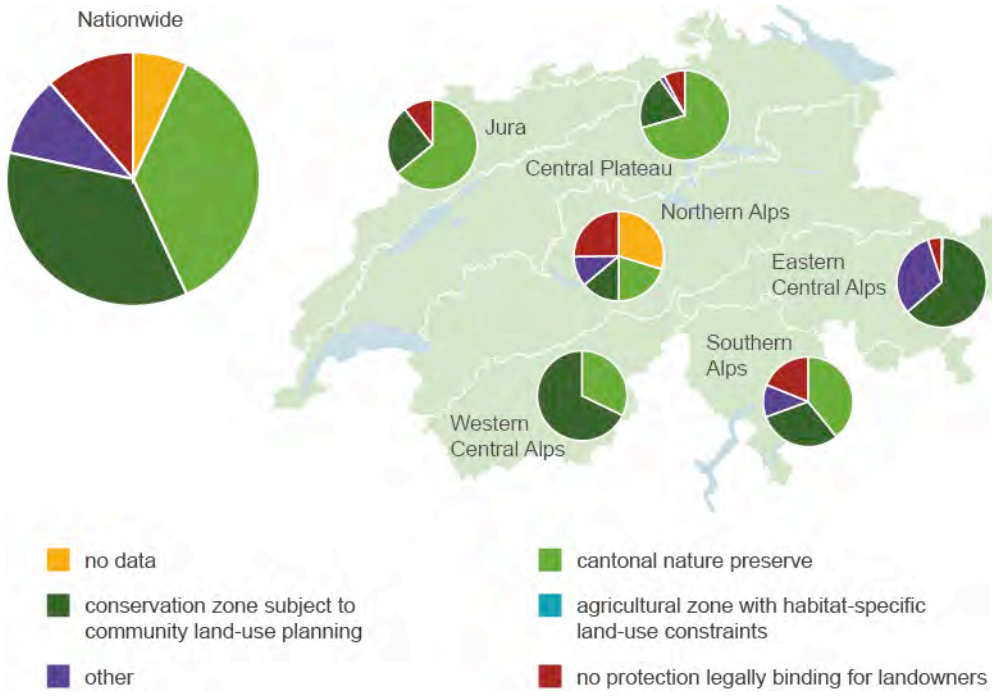
Understandably, implementation of conservation measures for dry grassland areas, which are protected by the youngest federal inventory, is lagging behind farthest.

Alluvial plains

Put into force in 1992, the Federal Inventory of Alluvial Plains has been complemented with additional protected areas in 2001, 2003 and 2007. Cantons were allowed a maximum period of six years for implementation. For most areas, that deadline expired long ago.

Alluvial plains: protection status

Fig. 1: Protection status of alluvial plains in Switzerland

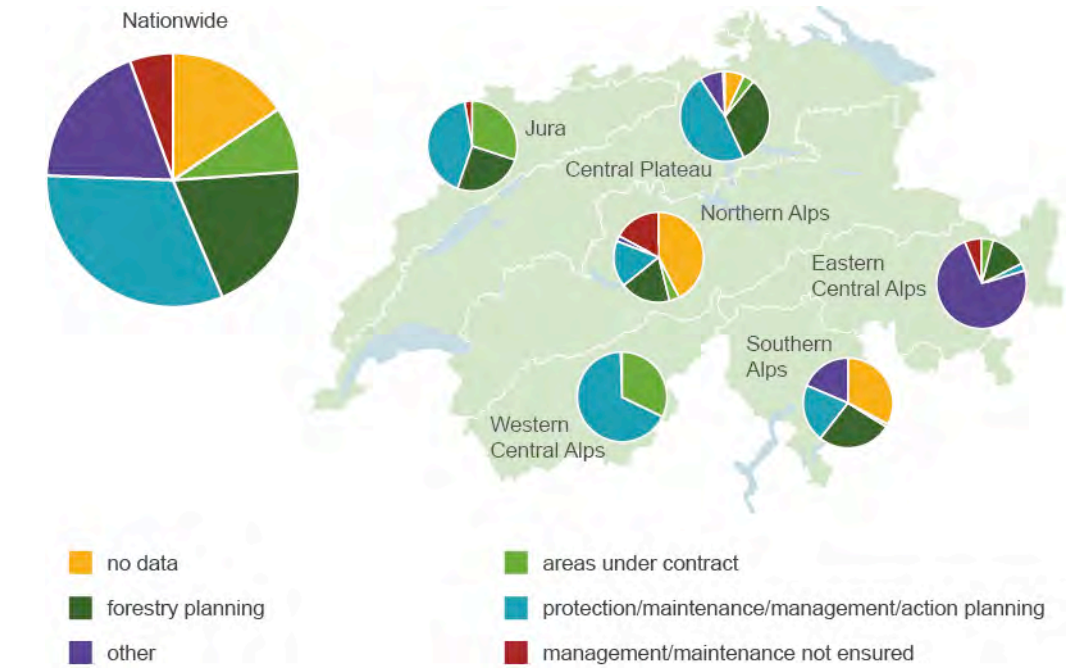


Comments

Roughly 82% of Switzerland's alluvial plains are in some way legally protected, but the nature of that protection varies widely. Whereas in the Jura and on the Central Plateau, the main instrument of conservation is the cantonal nature preserve, the Western and Eastern Central Alps mainly rely on conservation zones subject to community land-use planning. At 25%, the share of areas devoid of protection that is legally binding for landowners is particularly high in the Northern Alps. What is more, there is no data available for 30% of alluvial plains located there, while that share is 7% nationwide.

Alluvial plains: management and maintenance

Fig. 2: Management and maintenance of alluvial plains in Switzerland



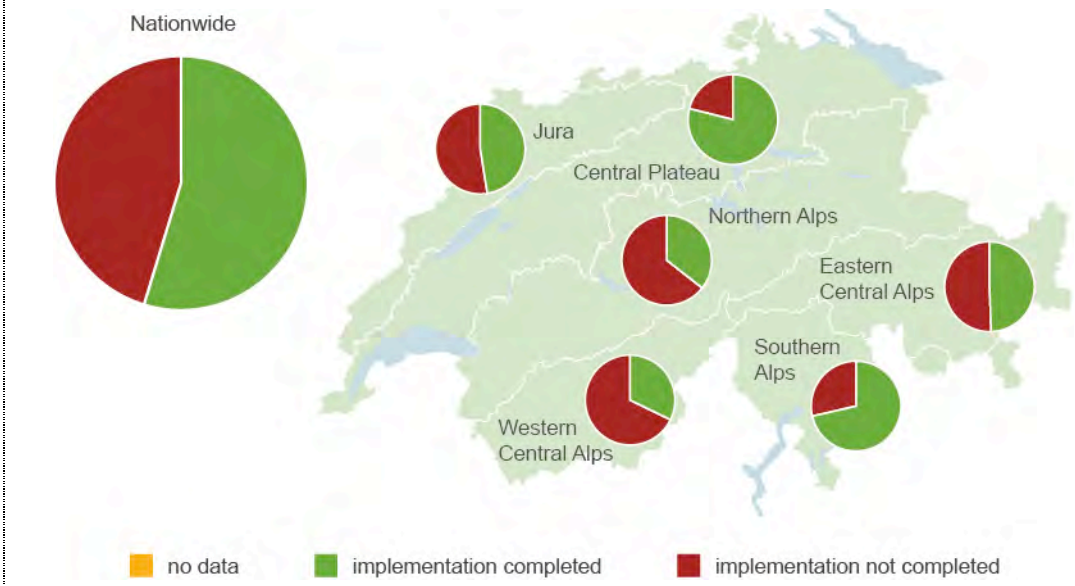
Comments

Protection, maintenance, management and action planning plays a major role, particularly in the Western Central Alps, on the Central Plateau, and in the Jura. Areas under contract take an important second place, above all in the Jura and the Western Central Alps. Since many alluvial plains include woodland sections, forestry planning makes an essential contribution (Central Plateau, Jura, Southern Alps). At 43%, the share of alluvial plains with no data available is conspicuously high in the Northern Alps.

The “other” category includes a number of measures such as protection that is legally binding for landowners in only a part of the area, stipulation in a canton’s guiding master plan, mining permits, alpine farm planning, dry grassland priority areas (planned), contracts, land owned by the canton, land owned by NGO, various.

Alluvial plains: implementation status

Fig. 3: Implementation status of alluvial plains in Switzerland



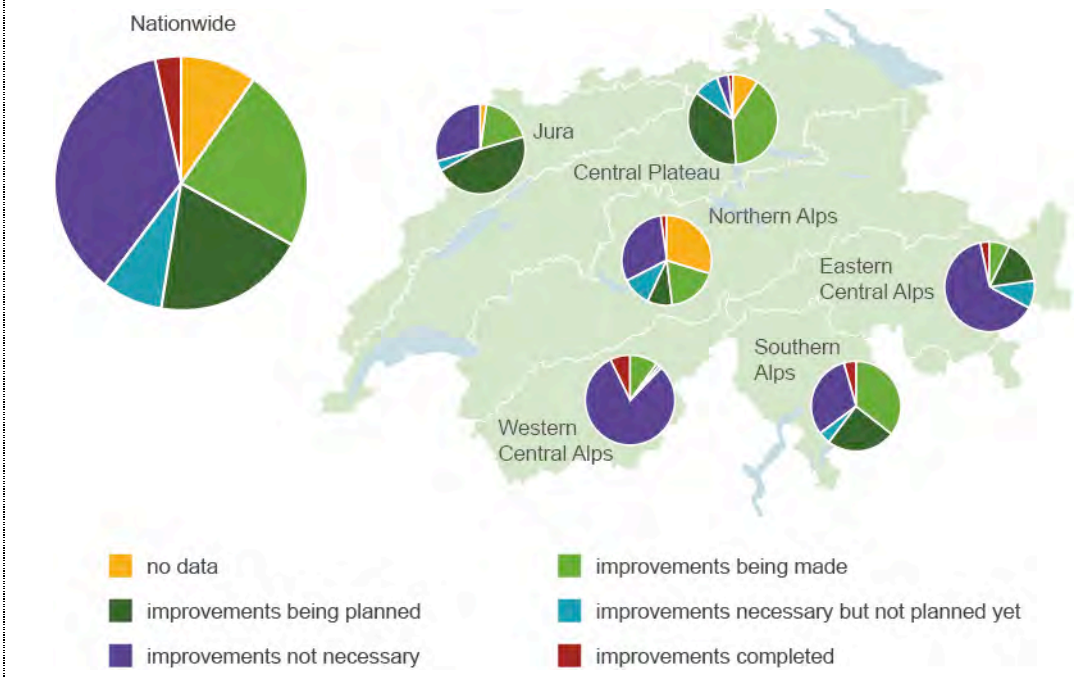
Comments

A protected area is considered to be implemented when it has been precisely demarcated, with conservation and maintenance measures ensured.

Even though close to 90% of all alluvial plains nationwide are subject to protection that is legally binding for landowners, cantons judge almost half of these areas to be insufficiently protected. In the Western Central Alps and the Northern Alps, this share amounts to 68% and 64% respectively. Combined, these two regions harbor roughly 42% of Switzerland's alluvial plains.

Alluvial plains: improvements

Fig. 4: Improvement of alluvial plains in Switzerland



Comments

There is a remarkably high share of protected alluvial plains that, according to the cantons, need no improvement. These areas are mostly alpine alluvial plains, above all glacier forefields in the Eastern and Western Central Alps, with that predominance a little lower in the Southern Alps, followed by the Northern Alps.

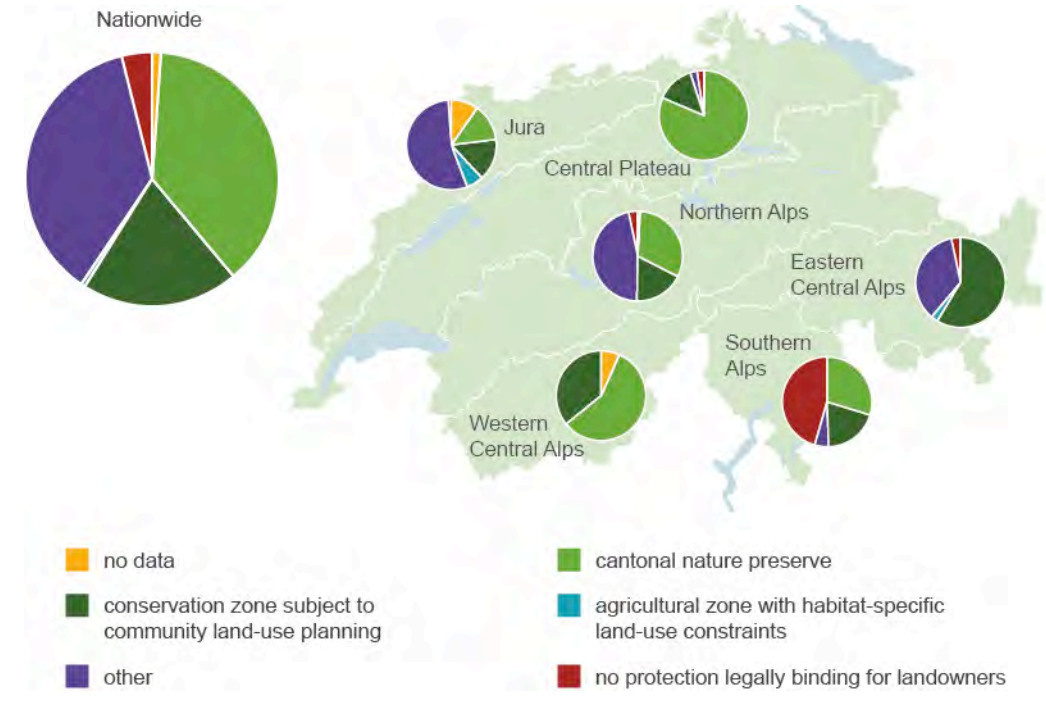
Fenlands and bogs

Moorland habitats of national importance are registered in two federal inventories: the Federal Inventory of Raised Bogs and Transition Bogs (Raised Bog Inventory) and the Federal Inventory of Fenlands (Fenland Inventory). The Raised Bog Inventory was put into force in 1991, with revisions made in 2003. There were two protected areas added in 2007, but one of them has been taken off the list again. Put into force in 1994, the Fenland Inventory was complemented by additional areas in 1996 and 1998, with only very few more areas added on occasion of revisions in 2001, 2004 and 2007.

Since cantons were allowed a maximum period of six years for the implementation of fenland and bog areas as well, that deadline has long since expired in most cases.

Fenlands: protection status

Fig. 5: Protection status of fenlands in Switzerland

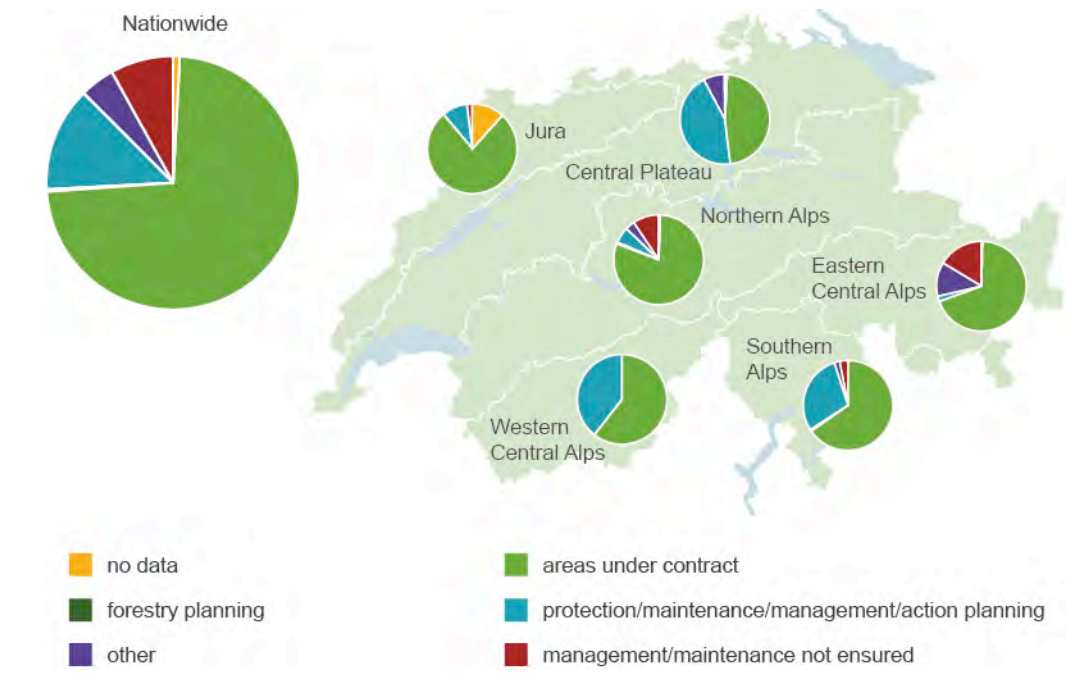


Comments

The situation paints a rather positive picture nationwide, with the majority of fenlands benefiting from protection that is legally binding for landowners. However, this does not apply to the Southern Alps, where 45% of fenlands (141 hectares) are devoid of that kind of protection. Use of nature conservation instruments varies from one region to the next: While the Eastern Central Alps mainly rely on community land-use planning, the Western Central Alps clearly prefer to establish cantonal nature preserves.

Fenlands: management and maintenance

Fig. 6: Management and maintenance of fenlands in Switzerland

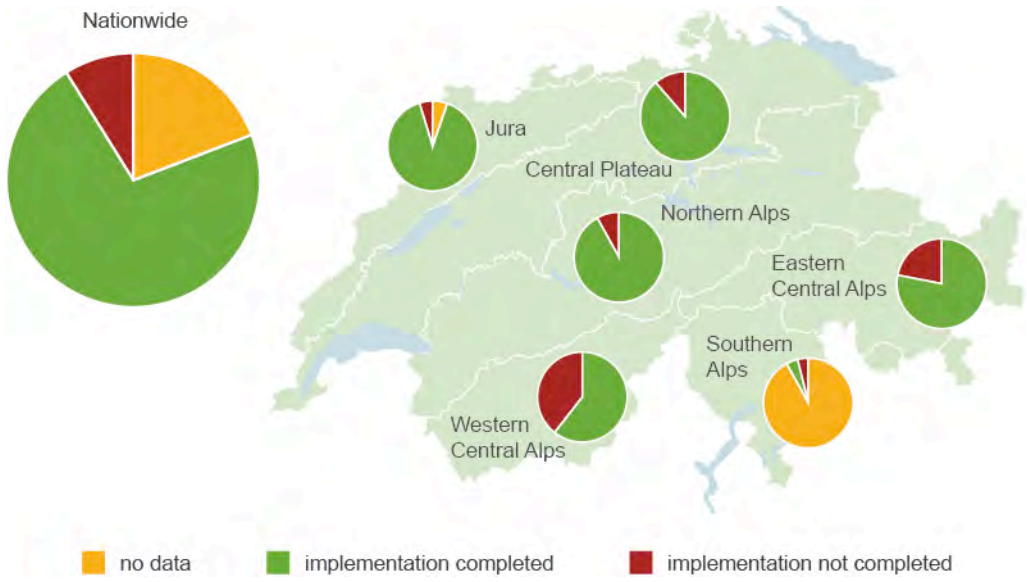


Comments

For just under 75% of the country's fenlands, management and maintenance have been stipulated in detail by contract. The nature conservation instrument of protection, maintenance, management and action planning is widely used as well, above all on the Central Plateau, but also in the Western Central Alps and the Southern Alps.

Fenlands: Implementation status

Fig. 7: Implementation status of fenlands in Switzerland



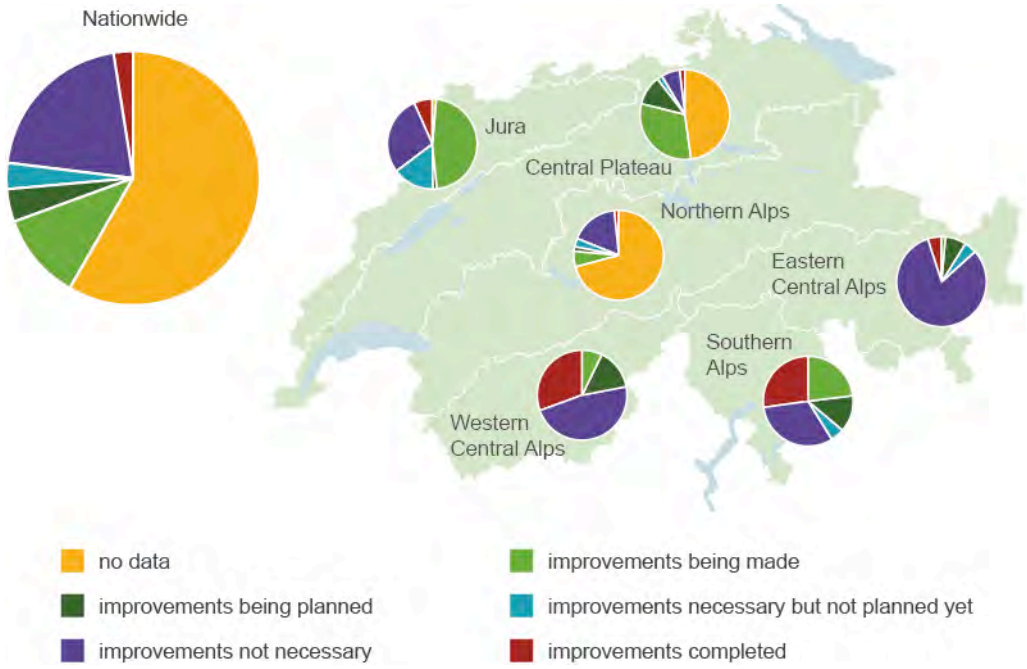
Comments

As assessed by the cantons themselves, protection of fenlands has not been implemented yet, despite regulations that are legally binding for landowners. The disparity is largest in the Western and Eastern Central Alps. While all fenlands in the Western Central Alps are covered by protection that is legally binding for landowners, protection is considered sufficient for only 61% of all areas. In the Eastern Central Alps, that share amounts to 78%, with 97% of fenlands covered by protection that is legally binding for landowners.

There is no data available for 92% of fenlands in the Southern Alps.

Fenlands: improvements

Fig. 8: Improvement of fenlands in Switzerland

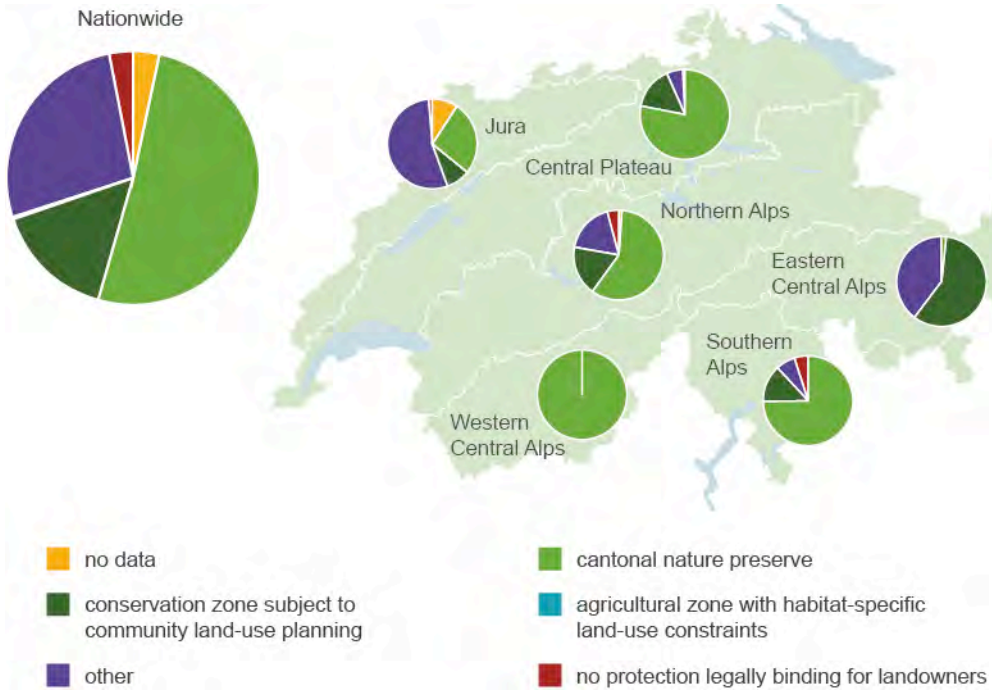


Comments

There is no improvement data available for 58% of the total size of fenlands nationwide, with data deficiency largest in the Northern Alps (no data for 71%) and on the Central Plateau (no data for 48%). It is worth noting that improvements are either considered not necessary or have already been completed for considerable shares of the fenland area in the Eastern Central Alps in particular, but also in the Western Central Alps and the Southern Alps. Most improvements are being made in the Jura, but this region holds a much smaller total area of fenlands than, say, the Central Plateau or the Northern Alps.

Raised bogs: protection status

Fig. 9: Protection status of raised bogs in Switzerland

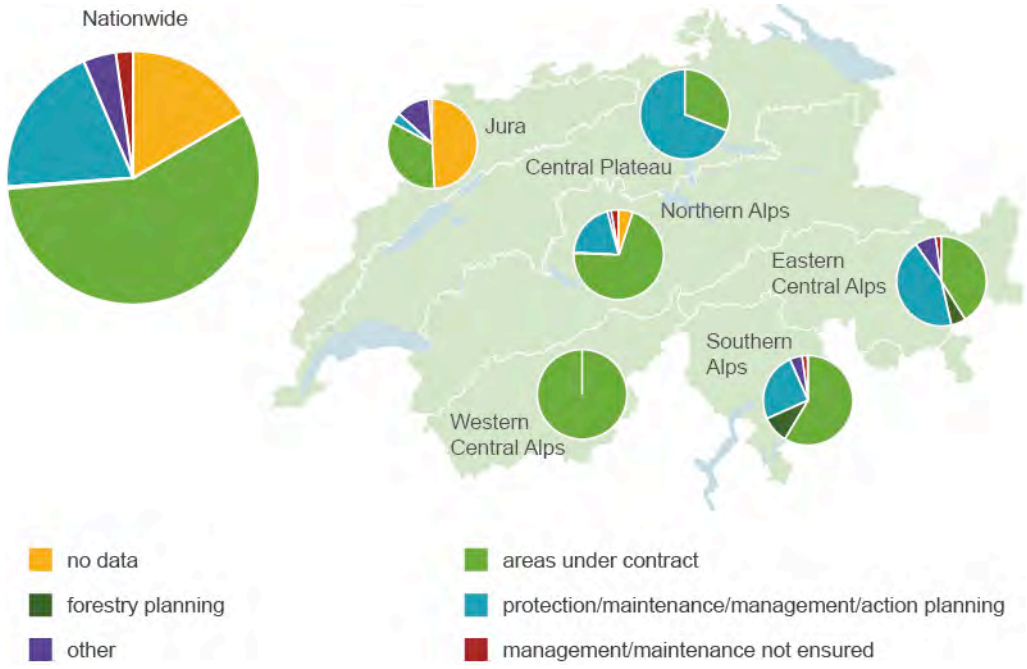


Comments

A mere 3% of Switzerland's raised bogs are not benefiting from protection that is legally binding for landowners. Except for one protected area in the canton of Neuenburg, the maximum implementation period granted to cantons ended in 2009. However, this high success rate is more likely due to the fact that raised bogs are not part of the agricultural production land and have been "classical" nature preserves for a long time. The nature conservation instrument most widely used is the "cantonal nature preserve", except in the canton of Graubünden, where—among other means—preference is given to the "conservation zone subject to community land-use planning".

Raised bogs: management and maintenance

Fig. 10: Management and maintenance of raised bogs in Switzerland

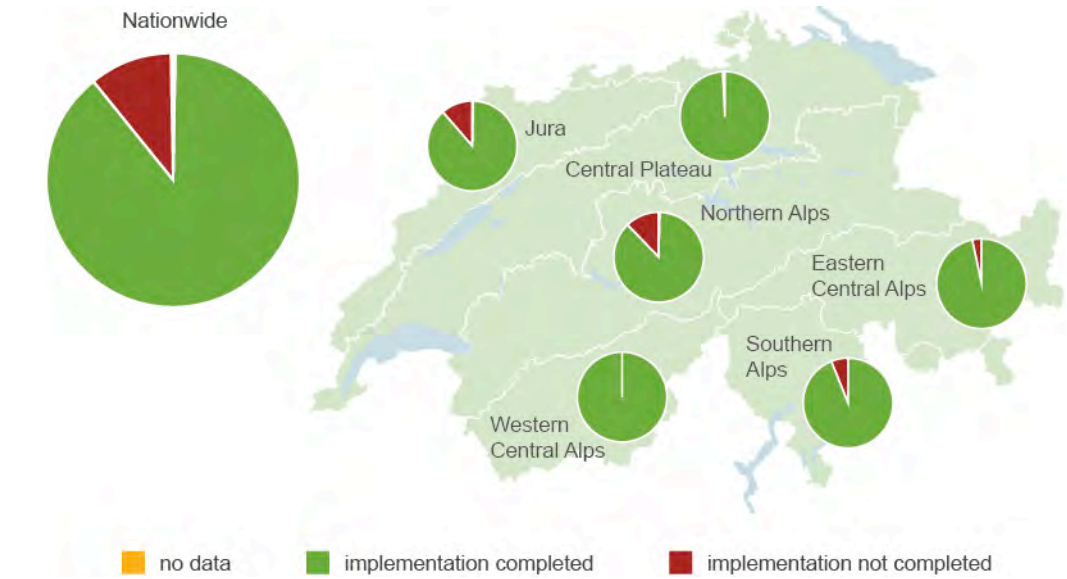


Comments

Management and maintenance are primarily ensured by means of areas under contract. Another important role is played by “protection, maintenance, management and action planning”: On the Central Plateau, for example, this instrument is used for 69% of all raised bogs.

Raised bogs: implementation status

Fig. 11: Implementation status of raised bogs in Switzerland

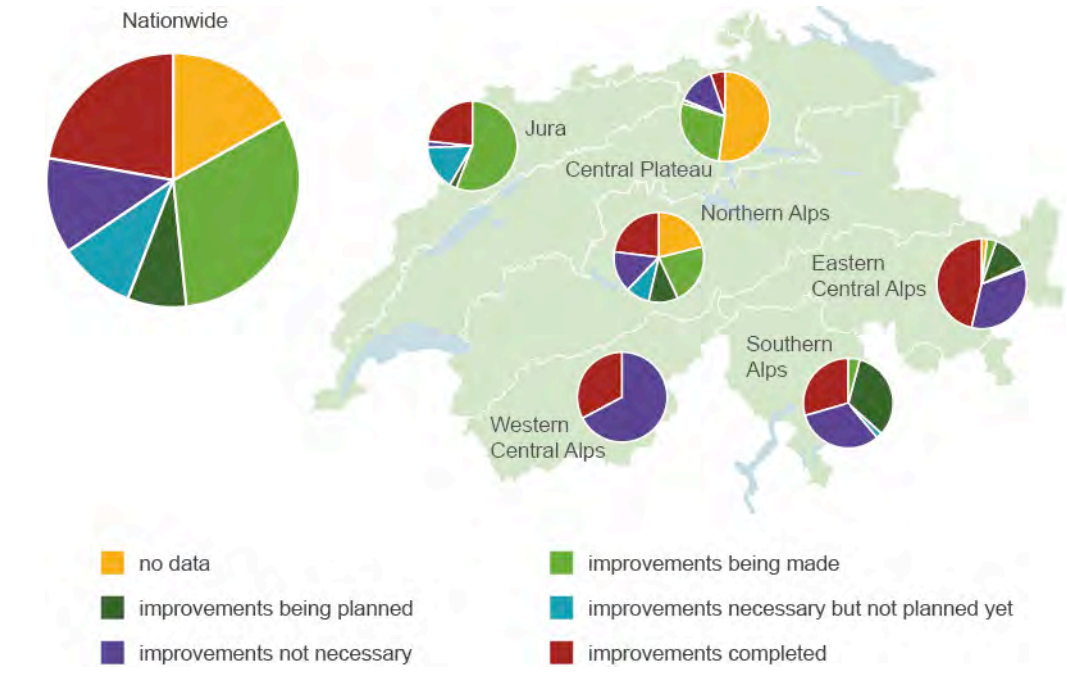


Comments

Cantons consider 89% of the total size of raised bogs nationwide to be implemented. It is above all the Jura, the Northern and the Southern Alps that still report shortfalls.

Raised bogs: improvements

Fig. 12: Improvement of raised bogs in Switzerland



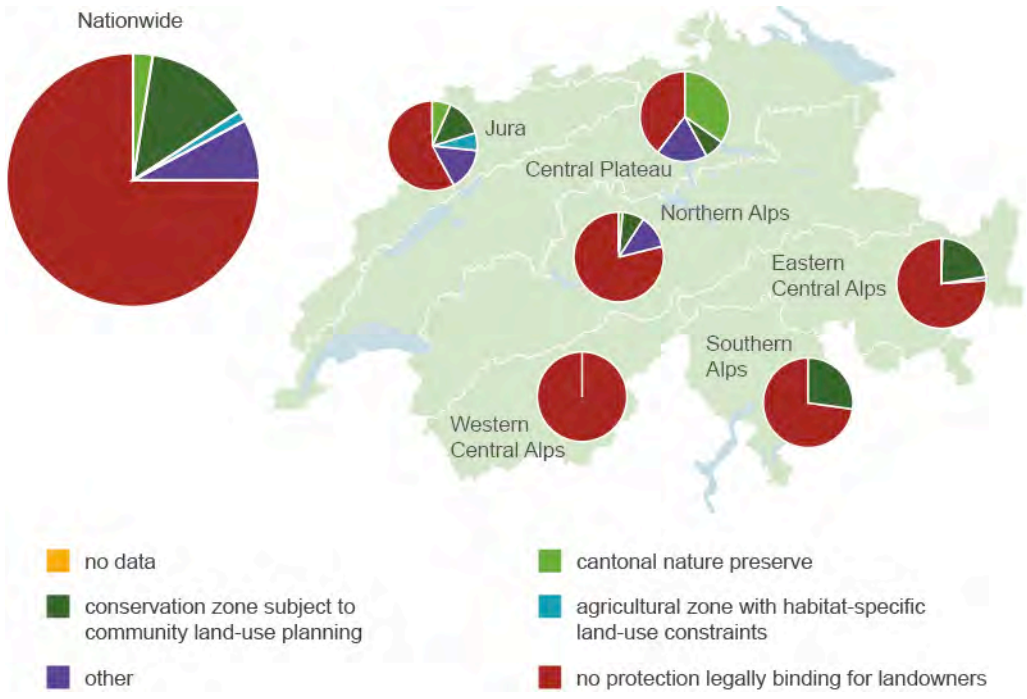
Comments

Poll results primarily show that a large number of raised bog improvement projects have already been completed or are still underway, with the latter particularly applying to the Jura, the Central Plateau and the Northern Alps. From a nature conservation point of view, it is also welcome news that, except for the Jura, all biogeographical regions hold large shares of raised bog areas that do not need improvement in the opinion of the cantons. However, this evaluation may well be the result of both the secluded location of the corresponding raised bogs and insufficient knowledge about the actual situation on site.

Dry grassland: protection status

The Federal Inventory of Dry Grassland has not been put into force until early 2010. For this reason, it would be unrealistic to expect relevant legal provisions to be implemented already.

Fig. 13: Protection status of dry grassland in Switzerland

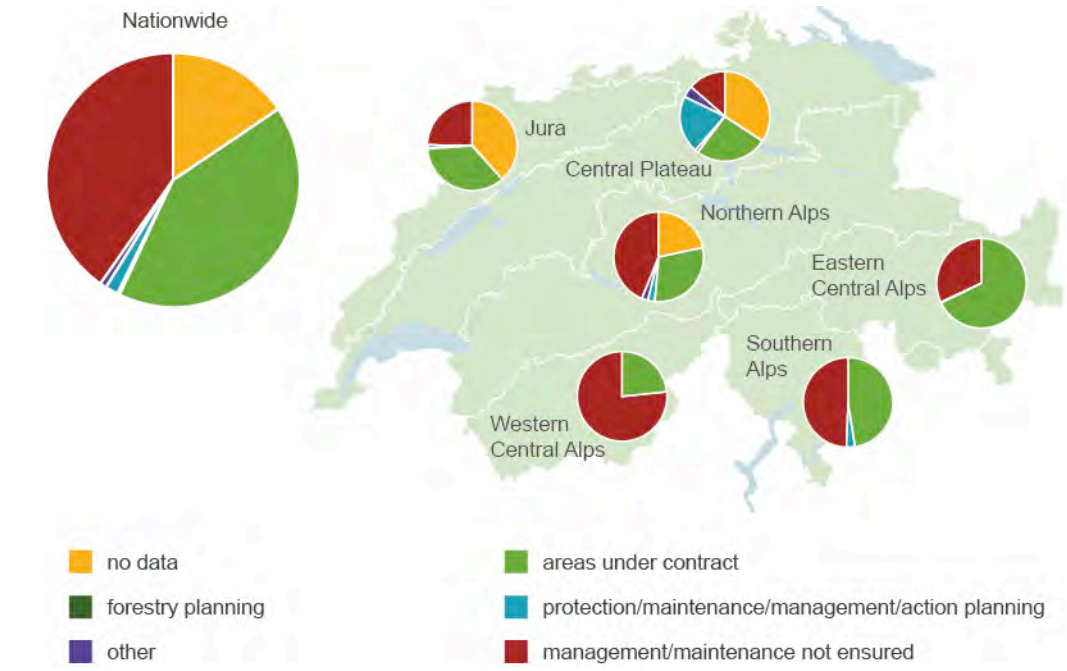


Comments

It is obvious by figure 13 that there is above all dire need for protection that is legally binding for landowners in all regions. Still, this is not really surprising, as the 10-year period allowed for implementing protected areas of dry grassland did not start until early 2010. Nevertheless, it is worth noting that on the Central Plateau, 35% of dry grassland areas are cantonal nature preserves, and considerable shares of land have been earmarked as “conservation zone subject to community land-use planning” in the Eastern Central Alps and the Southern Alps (22% and 27% respectively). At 42%, the Jura, too, holds a significant share of dry grassland areas covered by protection that is legally binding for landowners. But that is likely to be due to the fact that certain regions took up the cause of nature conservation for dry habitats quite some time ago.

Dry grassland: management and maintenance

Fig. 14: Management and maintenance of dry grassland in Switzerland

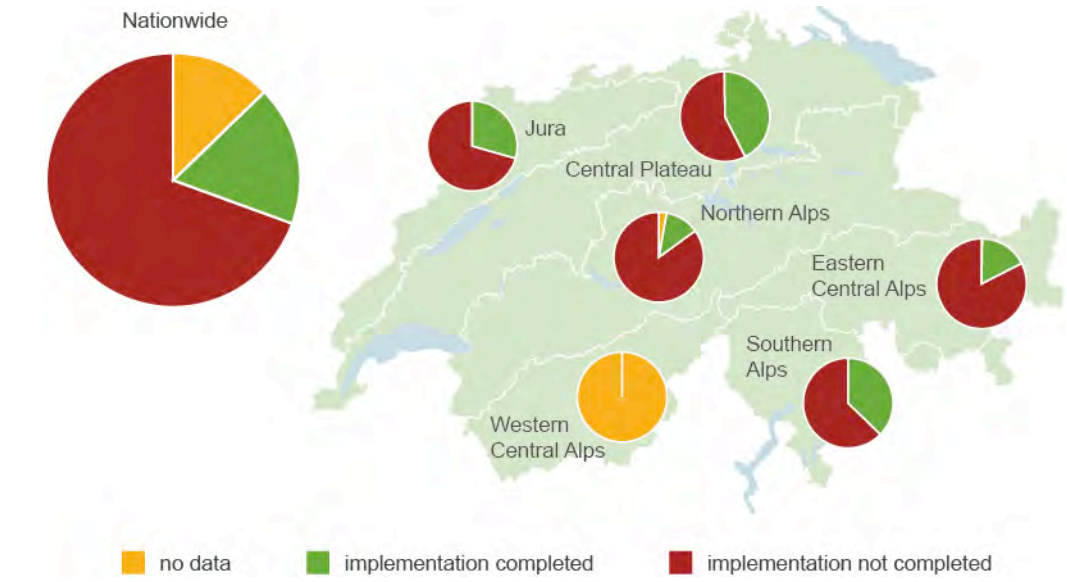


Comments

Surprisingly enough, management and maintenance of dry grassland areas are ensured for roughly 45% of their total size nationwide even though that federal inventory has not been put into force until 2010. In the Eastern Central Alps, this even applies to 68%, with the primary instrument being the “area under contract”.

Dry grassland: implementation status

Fig. 15: Implementation status of dry grassland in Switzerland

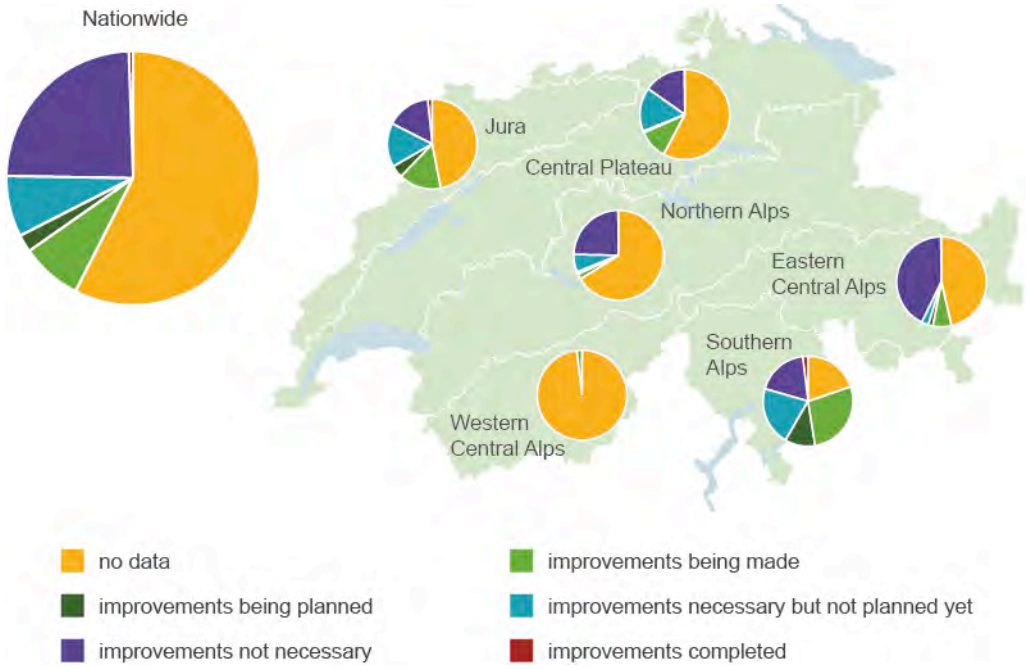


Comments

Nationwide, the Federal Inventory of Dry Grassland has been implemented on 18% of its total size so far. Shares are relatively high on the Central Plateau (43%), in the Southern Alps (37%) and in the Jura (29%). There is no data available for the Western Central Alps at all.

Dry grassland: improvements

Fig. 16: Improvement of dry grassland in Switzerland



Comments

It strikes the eye that there is no data available for a very large share of areas, i.e. 58% nationwide, and as much as 98% in the Western Central Alps.

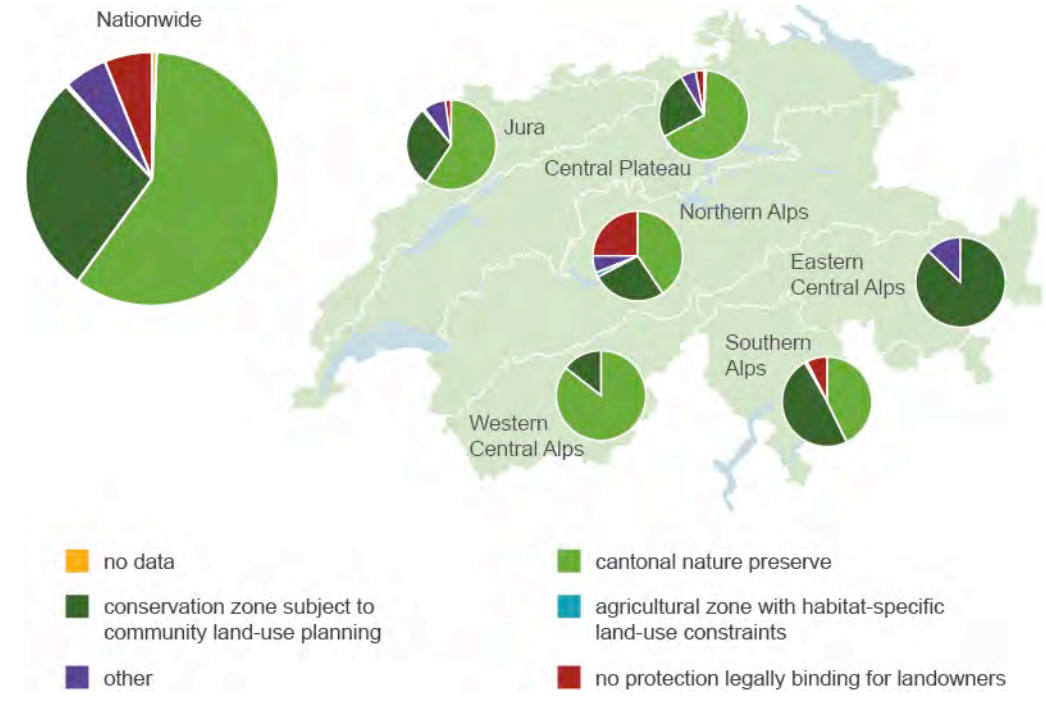
Amphibian spawning areas

Amphibian spawning areas are differentiated into stationary and shifting sites. Usually represented by ponds, aggregate ponds, small lakes or other wetlands, the size and location of stationary spawning areas are clearly defined and demarcated on National Maps. Shifting spawning sites, however, are found in active rock mining areas, mainly in gravel pits. Such wetland habitats are created by mining activities, making them dynamic environments that offer temporary spawning sites. As such, their location is roughly defined by the expanse of the pit, lacking any precise demarcation otherwise. Essentially, they are pinpoint sites, which is why data about shifting spawning sites refer to their number rather than their size.

The Federal Inventory of Amphibian Spawning Areas was put into force on August 1, 2001. Major revisions definitively adding new areas took place in 2003 and 2007. Since the implementation period was set to be seven years, it has already expired for the large majority of areas.

Stationary amphibian spawning areas: protection status

Fig. 17: Protection status of stationary amphibian spawning areas in Switzerland

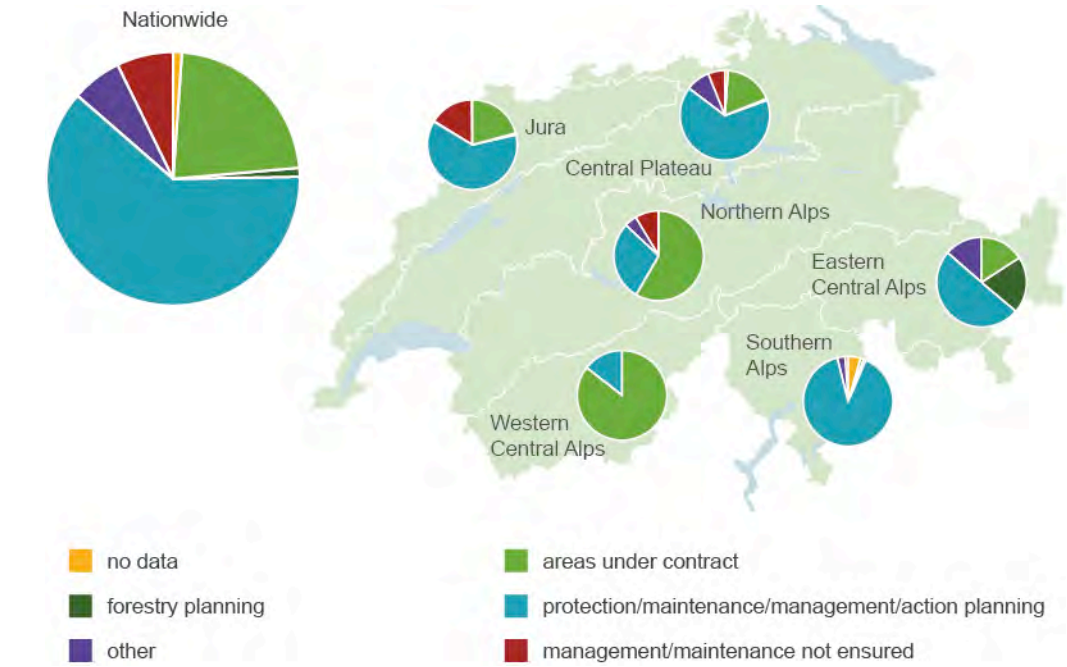


Comments

With the exception of the Eastern Central Alps that primarily rely on conservation zones subject to community land-use planning, cantonal nature preserves are the predominant solution. The biggest shortfall in protection was registered in the Northern Alps, where 25% of all areas lack protection that is legally binding on landowners.

Stationary amphibian spawning areas: management and maintenance

Fig. 18: Management and Maintenance of stationary amphibian spawning areas in Switzerland

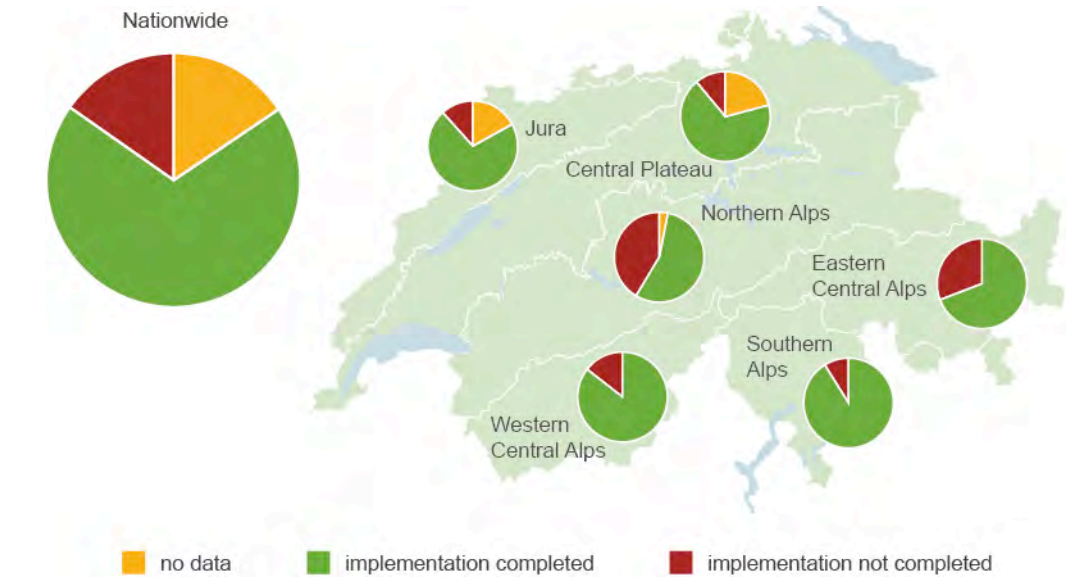


Comments

Management and maintenance of stationary amphibian spawning areas are above all ensured by protection, maintenance, management and action planning. This conservation instrument is used for 62% of the areas nationwide, and for 90% in the Southern Alps. However, both the Western Central Alps and the Northern Alps are dominated by “areas under contract”.

Stationary amphibian spawning areas: implementation status

Fig. 19: Implementation status of stationary amphibian spawning areas in Switzerland

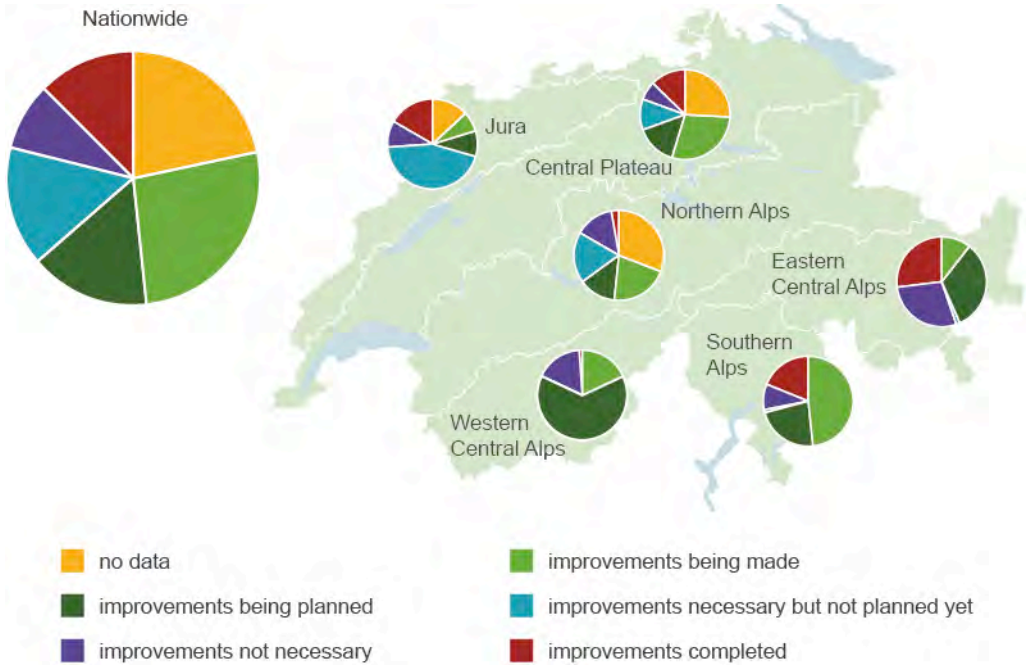


Comments

69% of all stationary areas nationwide are considered to be implemented. Sizeable shortfalls are mainly found in the Northern Alps (implementation not completed for 41%) and the Eastern Central Alps (31%).

Stationary amphibian spawning areas: improvements

Fig. 20: Improvement of stationary amphibian spawning areas in Switzerland



Comments

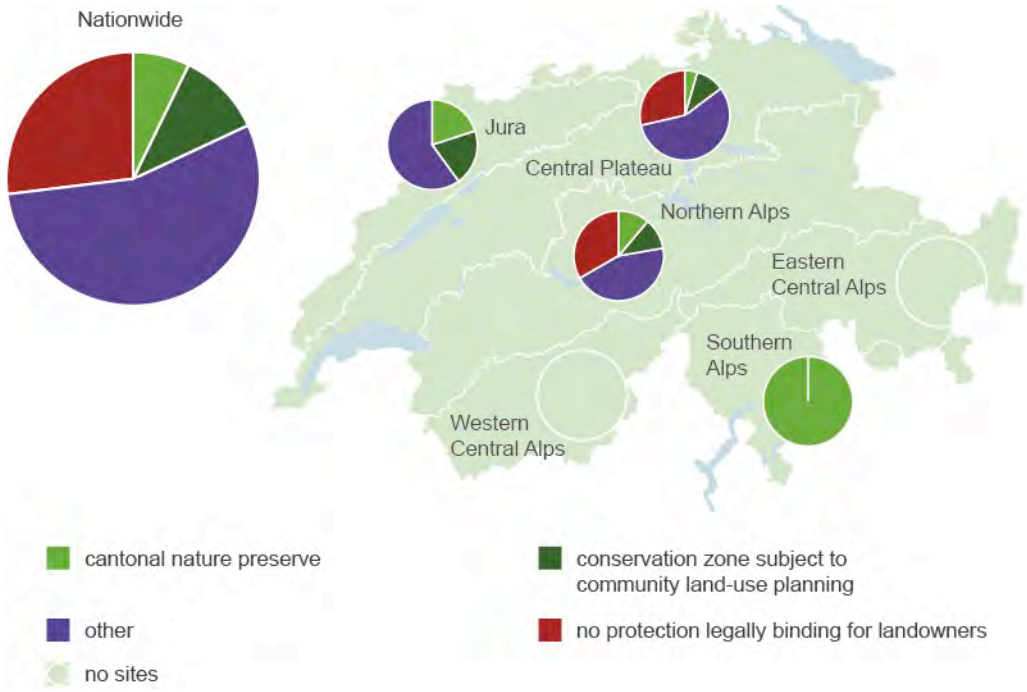
The share of areas considered to be in no need for improvement is remarkable: merely 9% nationwide. In individual regions, percentages vary between 7% (Central Plateau) and 28% (Eastern Central Alps).

Shifting amphibian spawning areas

There are no such areas in the Western or Eastern Central Alps. Incidentally, data refer to the number of sites rather than their size (see p. 20).

Shifting amphibian spawning areas: protection status

Fig. 21: Protection status of shifting amphibian spawning areas in Switzerland

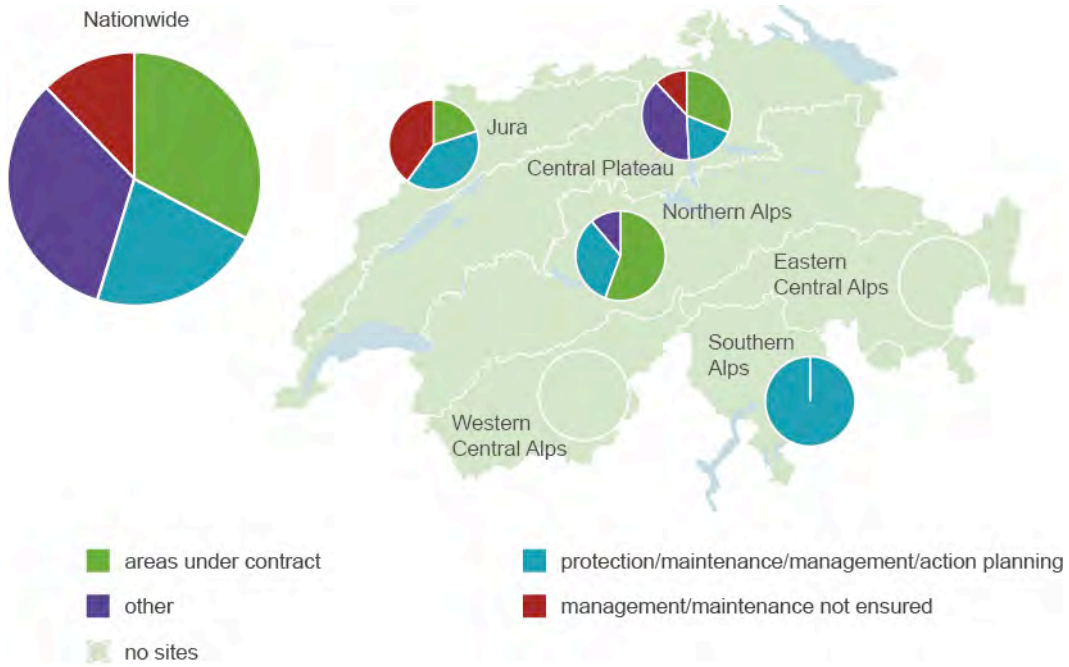


Comments

27% of all shifting sites nationwide lack protection that is legally binding for landowners. The “cantonal nature preserve” may seem to be the principal instrument used in the Southern Alps, but is actually covering only one site, registered under TI472, ESR Interna and situated in Novazzano in the Tessin.

Shifting amphibian spawning areas: management and maintenance

Fig. 22: Management and maintenance of shifting amphibian spawning areas in Switzerland

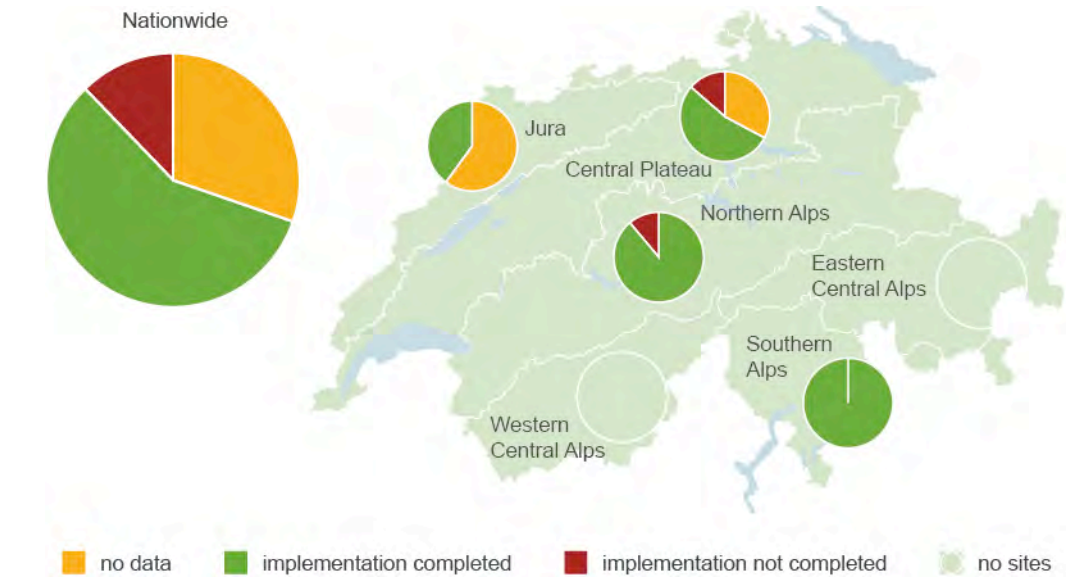


Comments

Management and maintenance of 12% of shifting spawning areas nationwide are not ensured, with all of them located in the Jura or on the Central Plateau. The remaining sites are mostly taken care of using either of two nature conservation instruments: “areas under contract” and “protection, maintenance, management and action planning”.

Shifting amphibian spawning areas: implementation status

Fig. 23: Implementation status of shifting amphibian spawning areas in Switzerland

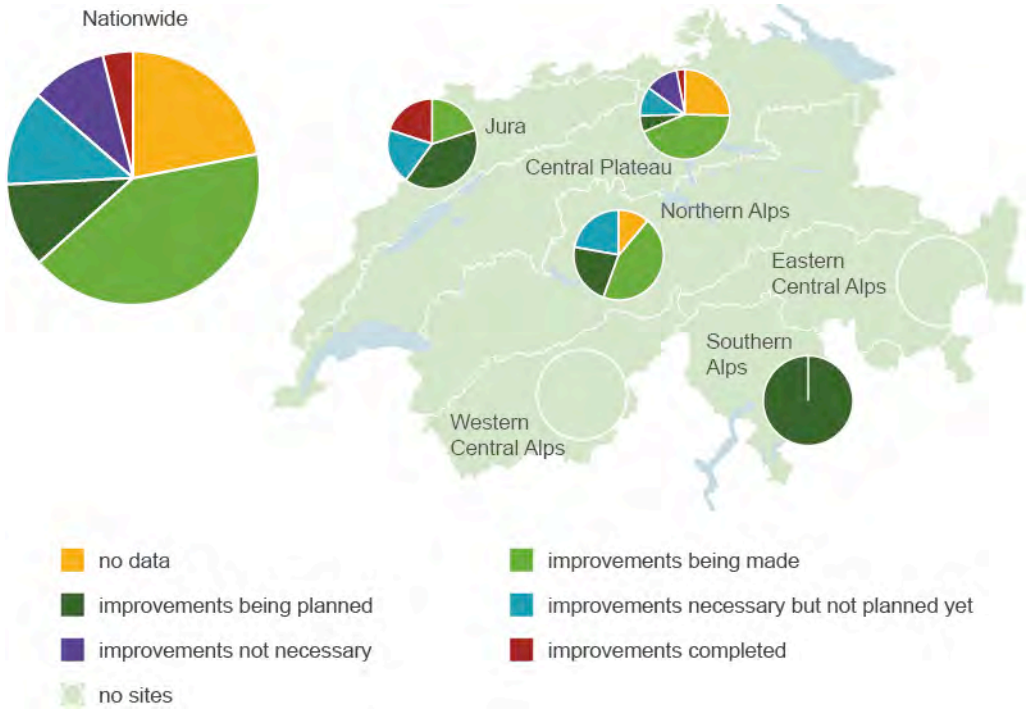


Comments

Both the Central Plateau and the Northern Alps report shortfalls in implementation, while there is no data available for 60% of sites in the Jura.

Shifting amphibian spawning areas: improvements

Fig. 24: Improvement of shifting amphibian spawning areas in Switzerland



Comments

Apparently, the need for improvement is high, as only 12% of the sites (all of them located on the Central Plateau) have been assigned to the “improvements not necessary” category.

Sources
Federal Office for the Environment FOEN, Species, Ecosystems, Landscapes Division. Database extracts dated May 2011.

naturaqua Bern. Database extracts dated May 2011.

Status
All federal inventories: 2010 poll.

Bibliography
Borgula, A.; Ryser, J.; Fallot, P. 2010: *Zustand und Entwicklung der Amphibienlaichgebiete von nationaler Bedeutung in der Schweiz*. Bundesamt für Umwelt, BAFU, Bern 44 S.

Significance for biodiversity

Designating protected areas is a measure that has been taken since nature conservation first began. While such nature preserves are mostly or completely dedicated to nature conservation, prioritizing nature does not totally exclude any kind of land use, for example for agricultural purposes. However, every kind of land use is required to be in line with the area's nature conservation goals.

In the 19th century, i.e. in the early days of nature conservation, nature preserves were mostly established to protect individual species. Nowadays, conservation efforts increasingly focus on whole ecosystems or ecosystem complexes. This trend has been emphasized since the Swiss Nature and Cultural Heritage Protection Act was revised in 1987, when the federal government's authority in matters of habitat protection was bolstered and the legal foundation for habitat inventories laid. An area included in a federal inventory holds the kind of habitat that is considered to be the most valuable pursuant to the intention of that particular inventory. Protecting them is a prerequisite for maintaining the country's biological diversity. But since they are relatively small, it is vital that they be linked to other areas by migratory axes or stepping stone habitats. Isolated individual preserves are unable to maintain biodiversity. Increasing them in size and linking them to other habitats of the same or even another type makes them all the more valuable.

Marking an area on a map included in a federal inventory does not guarantee its protection. Federal inventory habitats need to be effectively protected and maintained on site, and for this to happen, landowners must be legally bound to provide that protection. It is the duty of the cantons to implement the required protective measures at a local level or delegate implementation to individual communities.

Definition

The M2 indicator “Size of Secure Protected Areas” monitors nature preserves that are included in a federal habitat inventory subject to article 18a of the Swiss Nature and Cultural Heritage Protection Act, with protection legally implemented at a cantonal level.

Supplying the data analyzed by this indicator, federal habitat inventories are established applying scientific expertise and uniform methods all over Switzerland. Their protection goals are geared to biodiversity.

Regional and local nature preserves are administered by cantons and communities respectively. Their protection goals vary, and they are not always dedicated to promoting biodiversity. Moreover, there is no uniform and accessible data available on these preserves. For this reason, the M2 indicator disregards regional and local nature preserves.

Landscape protection areas such as peatlands are disregarded as well, since their protection goals are not primarily geared to promoting biodiversity, either.

The Swiss National Park is also ignored by the M2 indicator, since it would otherwise add a constant value to the expanse of Switzerland as a whole and the Eastern Central Alps biogeographical region.

Surveying methods

All information is based on a poll that the Federal Office for the Environment FOEN conducted in 2010, sending a multiple-choice questionnaire to all cantons. For M2 purposes, answers concerning federal habitat inventories were evaluated with regard to the size of protected areas, both for Switzerland as a whole and its biogeographical regions. There is only one exception to that rule: Since shifting amphibian spawning sites are not recorded by size, all relevant percentage data refers to the number of sites in the corresponding population.

The following questions and possible answers were used for M2 evaluation:

- **Protection status**
  The key question was whether an area is covered by protection that is legally binding for landowners.
  Possible answers:
  No data
  Conservation zone subject to community land-use planning
  Cantonal nature preserve
  Agricultural zone with habitat-specific land-use constraints
  Other
  No protection that is legally binding for landowners
- **Management / Maintenance**
  Ensuring a protected area’s quality is of crucial importance, and doing so requires pertinent regulations on management and maintenance.
  Possible answers:
  No data
  Area under contract
  Forestry planning
  Protection/maintenance/management/action planning
  Other
  Management/maintenance are not ensured

- **Implementation**
  Implementation is considered to be completed when an area has been precisely demarcated, with conservation and maintenance measures in place.
  Possible answers:
  No data
  Implementation completed
  Implementation not completed

- **Improvement**
  While habitats of national importance may be of sufficient quality for them to be listed in the corresponding federal inventory, they are often adversely affected. Legal provisions stipulate that any impairment must be reversed as far as possible whenever the opportunity arises. This includes regenerating adversely affected parts of a habitat.
  Possible answers:
  No data
  Improvements are being made
  Improvements are being planned
  Improvements are necessary but have not been planned yet
  Improvements are not necessary
  Improvements are completed

All data have been supplied by the FOEN or its agents.

Further information

In charge of this indicator

Meinrad Küttel, meinrad.kuettel@bafu.admin.ch, +41 (0)31 322 93 24

FOEN expert contacts: Jürg Schenker, juerg.schenker@bafu.admin.ch, +41 (0)31 322 80 05
Stephan Lussi, stephan.lussi@bafu.admin.ch, +41 (0)31 324 49 94
Rolf Waldis, rolf.waldis@bafu.admin.ch, +41 (0)31 322 93 61

naturaqua expert contact: Leslie Bonnard, l.bonnard@naturaqua.ch +41 (0) 31 335 25 26

Additional sources of information

> www.ecogis.admin.ch GIS maps for locating nature preserves (as of 2012: map.bafu.admin.ch)

> http://www.bafu.admin.ch/index.html?lang=en FOEN website

> www.bafu.admin.ch/schutzgebiete-inventare FOEN habitat inventory list (not available in English)

> www.admin.ch/ch/d/sr/c451_31.html Ordinance on Alluvial Plains (not available in English)

> www.admin.ch/ch/d/sr/c451_32.html Ordinance on Raised Bogs (not available in English)

> www.admin.ch/ch/d/sr/c451_33.html Ordinance on Fenlands (not available in English)

> www.admin.ch/ch/d/sr/c451_34.html Ordinance on Amphibian Spawning Areas (not available in English)

> www.admin.ch/ch/d/sr/c451_37.html Ordinance on Dry Grassland (not available in English)

This information is based on the German language document 950_M2_Basisdaten_2010_v1.doc dated September 28, 2011.