



Size of Protected Areas

Designated areas bindingly protected by law are important nature conservation tools generating long-term impact. Such areas promote biodiversity by protecting the habitats of endangered species, allowing wilderness to return on a permanent basis, or sustaining types of land use adapted to nature.

Monitoring alluvial zones, raised bogs, fenlands, amphibian spawning areas, dry grasslands, waterbird and migratory bird reserves, federal game reserves and the Swiss National Park, the M1 indicator records changes in the legally defined boundaries of protected areas.

The total size of protected areas increased from 29'449 hectares in 1991 to 257'018 hectares in 2013, which currently corresponds to 6.2% of the country's expanse. Strictly protected areas—including alluvial zones, raised bogs, fenlands, amphibian spawning areas, dry grasslands and the Swiss National Park—were extended as well during that period of time, increasing from 18'160 hectares to 90'495 hectares. In other words, they amount to 2.2% of Switzerland.

Status: March 2013

Contents

Development in Switzerland.....	2
Development in the biogeographical regions.....	6
Significance for biodiversity.....	14
Definition.....	14
Surveying methods.....	15
Further information.....	16
Data tables and complementary information.....	Appendix

Designed to record changes in the size of nature reserves of national importance that are protected by law, the M1 indicator monitors alluvial zones, raised bogs (including transition bogs), fenlands, amphibian spawning areas, dry grasslands, waterbird and migratory bird reserves, federal game reserves and the Swiss National Park. Except for the National Park—which was established by concluding agreements with several communities and one private landowner—, the size and location of such reserves are determined in federal inventories. However, they only account for a part of all protected areas in Switzerland. Due to lack of consistent data, protected areas of regional or local importance as well as landscape protection areas are disregarded by this indicator.

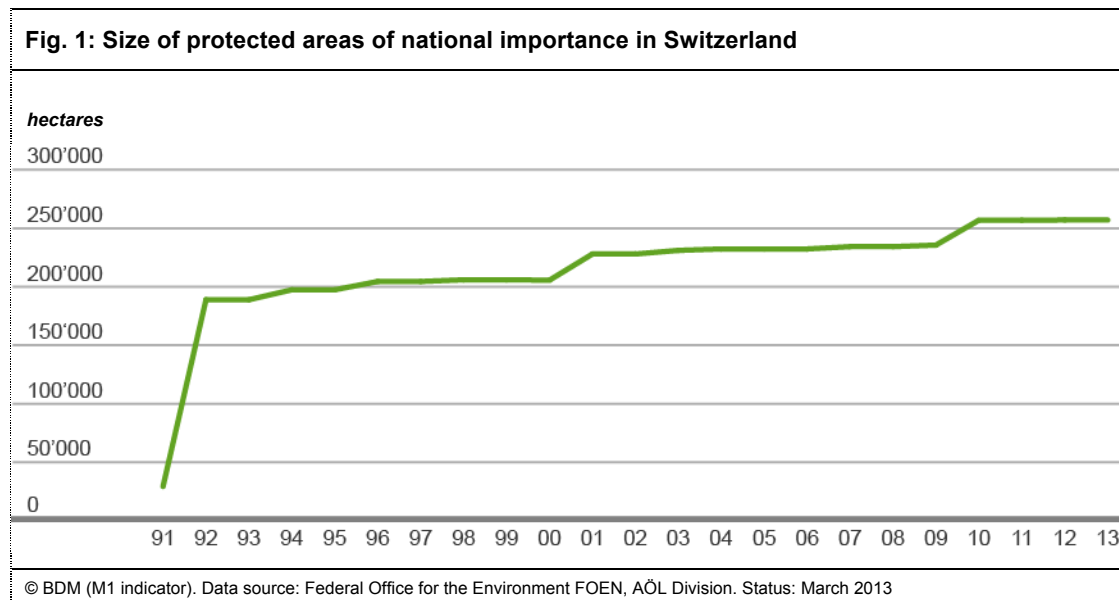
The M1 indicator differentiates between protected areas in general and strictly protected areas. The strictest protection is granted to the Swiss National Park, with nature protected against all human interference under the Swiss National Park Act. Alluvial zones, raised bogs, fenlands, dry grasslands and amphibian spawning areas are subject to article 18a of the Swiss Nature and Cultural Heritage Protection Act, which also results in strict protection. Waterbird and migratory bird reserves and federal game reserves are governed by the Federal Hunting Act. In these areas, protection is primarily aimed at rare or endangered wild mammals and birds as well as huntable species and their habitats rather than at comprehensive nature conservation. For this reason, BDM does not consider them to be strictly protected.

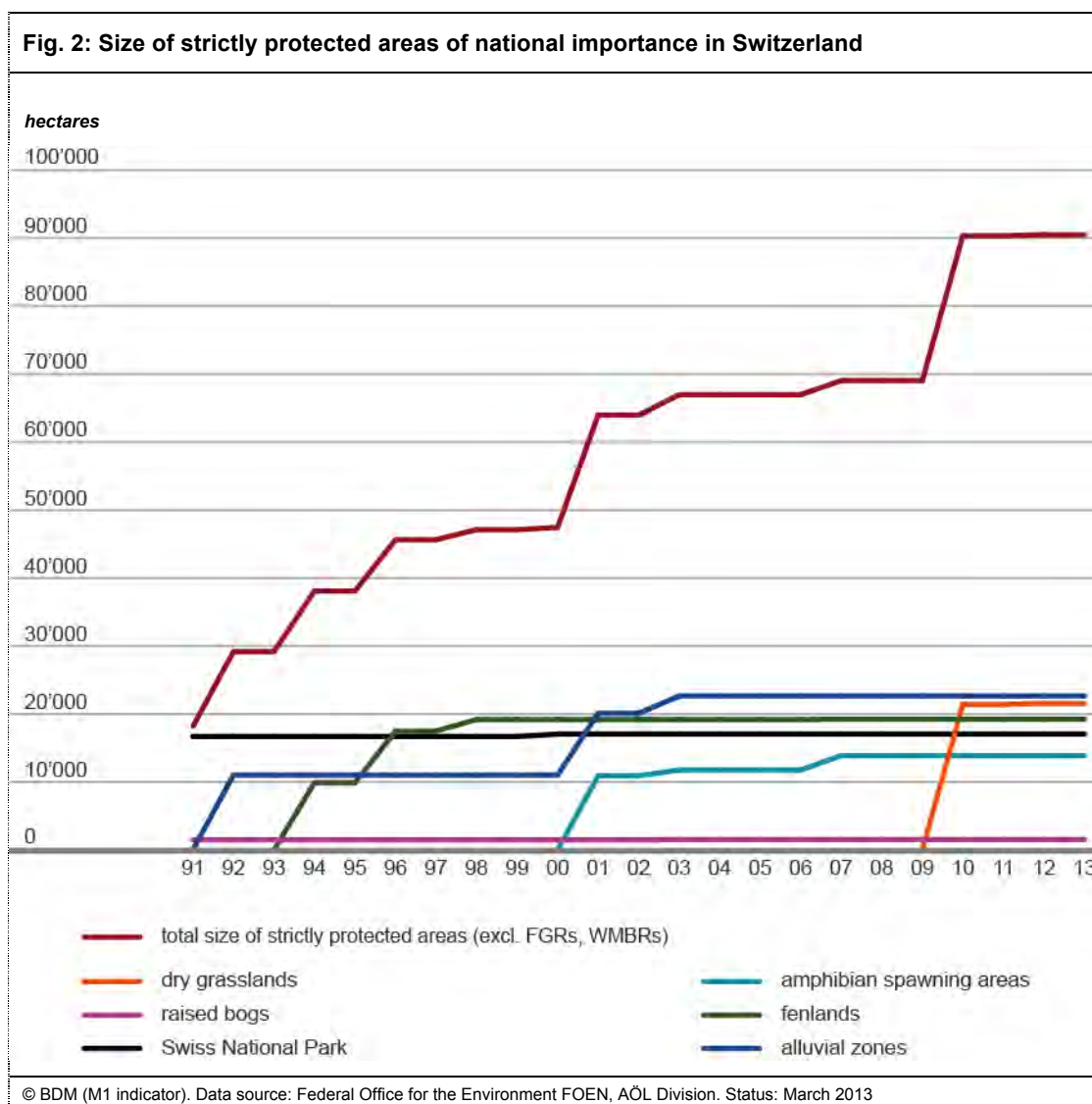
This indicator reflects changes in the size of protected areas brought about by either legally determined boundaries being modified or new areas being added. However, an increase in the size of protected areas does not mean that new habitats have been created. It merely indicates that Switzerland's federal government has placed additional areas under its legal protection.

For information on legal implementation of protected areas (alluvial zones, raised bogs and fenlands), please consult the M2 indicator. For information on the quality of valuable habitats (habitats of national importance), please consult the Z11 indicator.

Development in Switzerland

Figure 1 below illustrates the total size of all areas protected by federal inventories, complemented by the size of the Swiss National Park. These include federal game reserves (FGRs) and waterbird and migratory bird reserves (WMBRs). In contrast, figure 2 reflects the development observed regarding the size of strictly protected areas, which essentially covers all areas listed in federal habitat inventories (also monitored by the Z10 indicator), the Federal Inventory of Amphibian Spawning Areas, and the Swiss National Park.





Comments

- The size of areas protected by law in Switzerland has been increasing since 1991. The marked upsurge registered in 1992 must mainly be attributed to federal game reserves being newly included in the count that year. Federal game reserves have been created to maintain healthy populations of huntable species. In addition, they are intended to protect rare or endangered wild mammals and birds and their habitats.
- In 2001, the total size of protected areas increased considerably once more, mostly because the Federal Inventory of Alluvial zones and the waterbird and migratory bird reserves were extended by additional protected areas, and because the Ordinance on Amphibian Spawning Areas came into force. When this ordinance was revised in 2007, the corresponding federal inventory was increased by another roughly 2'100 hectares.
- The increase shown for 2010 is the result of the Ordinance on Dry Grasslands and the corresponding federal inventory being adopted that year.
- The total size of protected areas grew from 29'449 hectares in 1991 to 257'018 hectares in 2013. While the total size of strictly protected areas is smaller, it increased significantly as well, i.e. from 18'160 hectares to 90'495 hectares. In other words, 6.2% and 2.2% respectively of Switzerland's expanse are

currently protected by law. Just under 35% of the total size of protected areas are strictly protected at this time.

- At 59%, federal game reserves continue to represent the largest share of Switzerland's protected areas as monitored by BDM. In 1992, they even came to roughly 80%.
- When the federal government decided to subsidize the Swiss National Park in 1914, it became Switzerland's first nature conservation area to be legally protected on a federal level. The Park has been enlarged several times since then: Covering roughly 14'000 hectares when it was founded, it was expanded by approximately 1'500 hectares in 1918. Having grown to just over 17'000 hectares by 1932, the Park was reduced in size by roughly 1'000 hectares in 1936. After that, its size remained the same for a long time, until it was again increased by 900 hectares in 1961. The last increase to date took place in August of 2000, when the Macun lake landscape was added to the Swiss National Park.

Methodological notes

- It is not that 10'000 hectares of alluvial zones suddenly emerged between 2000 and 2001, but the corresponding protected areas were added to the Federal Inventory of Alluvial zones at that time. A similar event explains the abrupt expansion in 2009/2010, when the Federal Inventory of Dry Grasslands was adopted.
- The total size of protected areas in Switzerland is smaller than the sum of all categories because a number of protected areas overlap, i.e. the same areas have been included in several federal inventories. For example, areas simultaneously listed in the inventories of alluvial zones, fenlands, and waterbird and migratory bird reserves are counted only once. In 2007, almost 10'000 hectares were subject to multiple protection.
- Amphibian spawning areas are divided into permanent sites such as lakesides and temporary sites such as puddles. Temporary sites may occur in different places within a given perimeter, for example in pits or quarries, remaining there for only a short time. For indicator calculation purposes, each temporary site is assumed to cover 0.85 hectares.
- According to the definition of the World Conservation Union (International Union for Conservation of Nature and Natural Resources IUCN), a protected area is an area that is managed in order to achieve specific conservation goals. The IUCN primarily classifies protected areas by management type. Areas included in federal inventories (alluvial zones, amphibian spawning areas, fenlands, raised bogs, dry grasslands, waterbird and migratory bird reserves, federal game reserves) are part of IUCN category IV, while the Swiss National Park is a category I protected area.
- The M1 indicator does not record cantonal or communal nature conservation areas. In 2003, there were approximately 9'500 such nature conservation areas in Switzerland, covering roughly 43'000 hectares in all and corresponding to just about 1% of Switzerland's expanse. However, as some of these areas overlap areas included in federal inventories, they are partly registered by the M1 indicator.
- For data tables and complementary information, please consult Appendix.

Bibliography

IUCN, 1994: Guidelines for Protected Areas Management Categories. IUCN, Cambridge, Gland. 261 S.

Development in the biogeographical regions

The figures below show changes in the size of protected areas by biogeographical region.

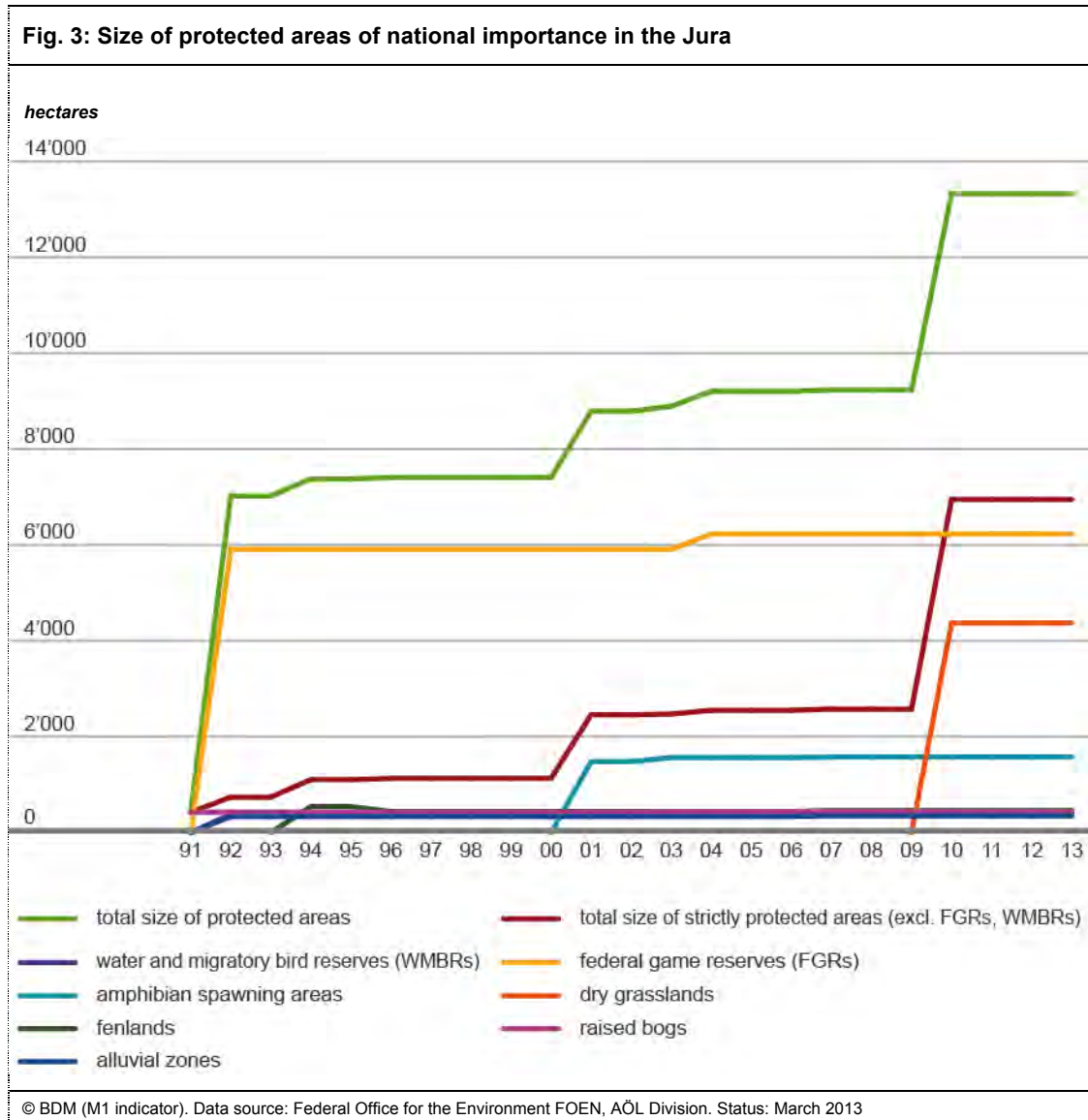
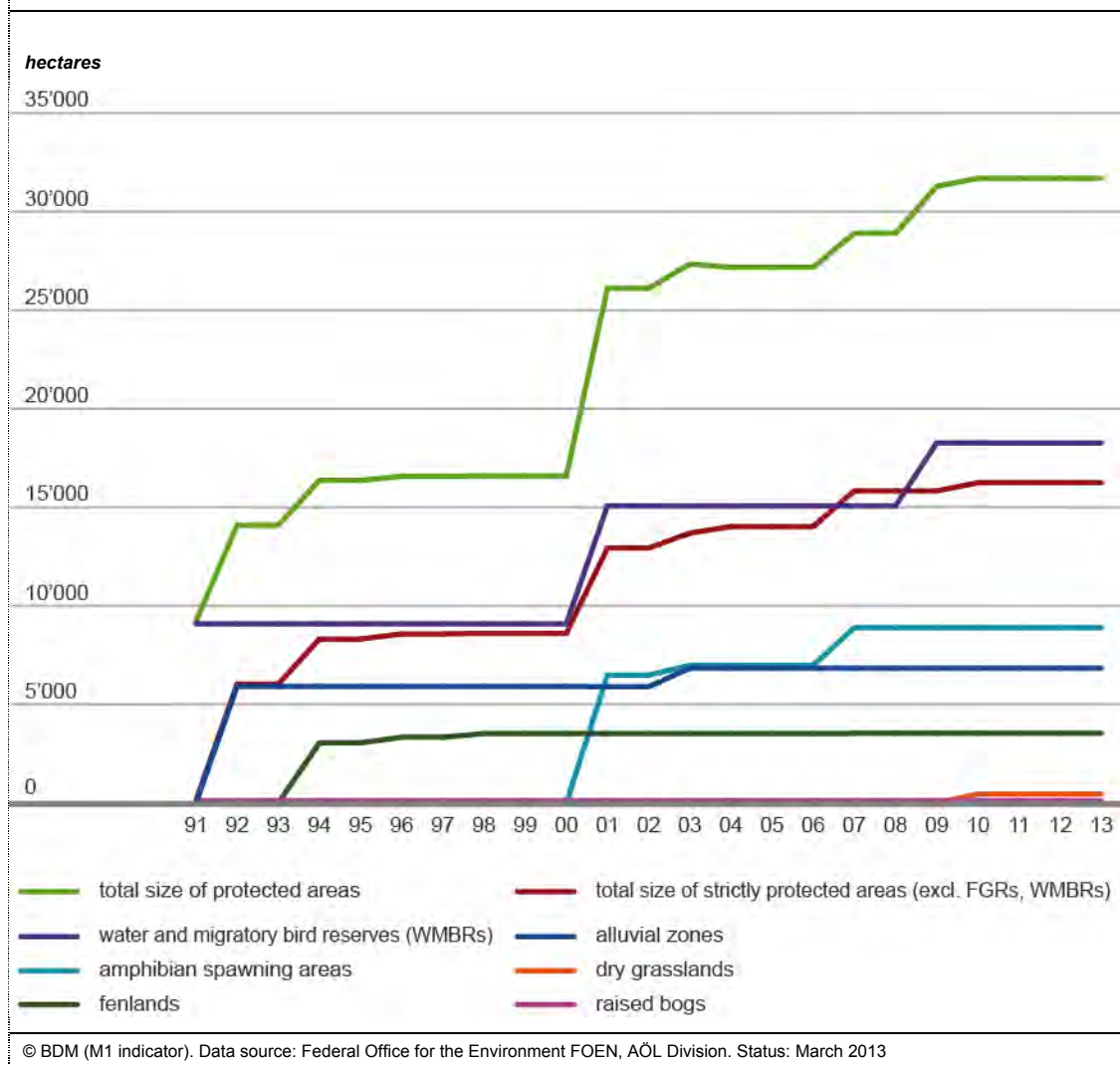
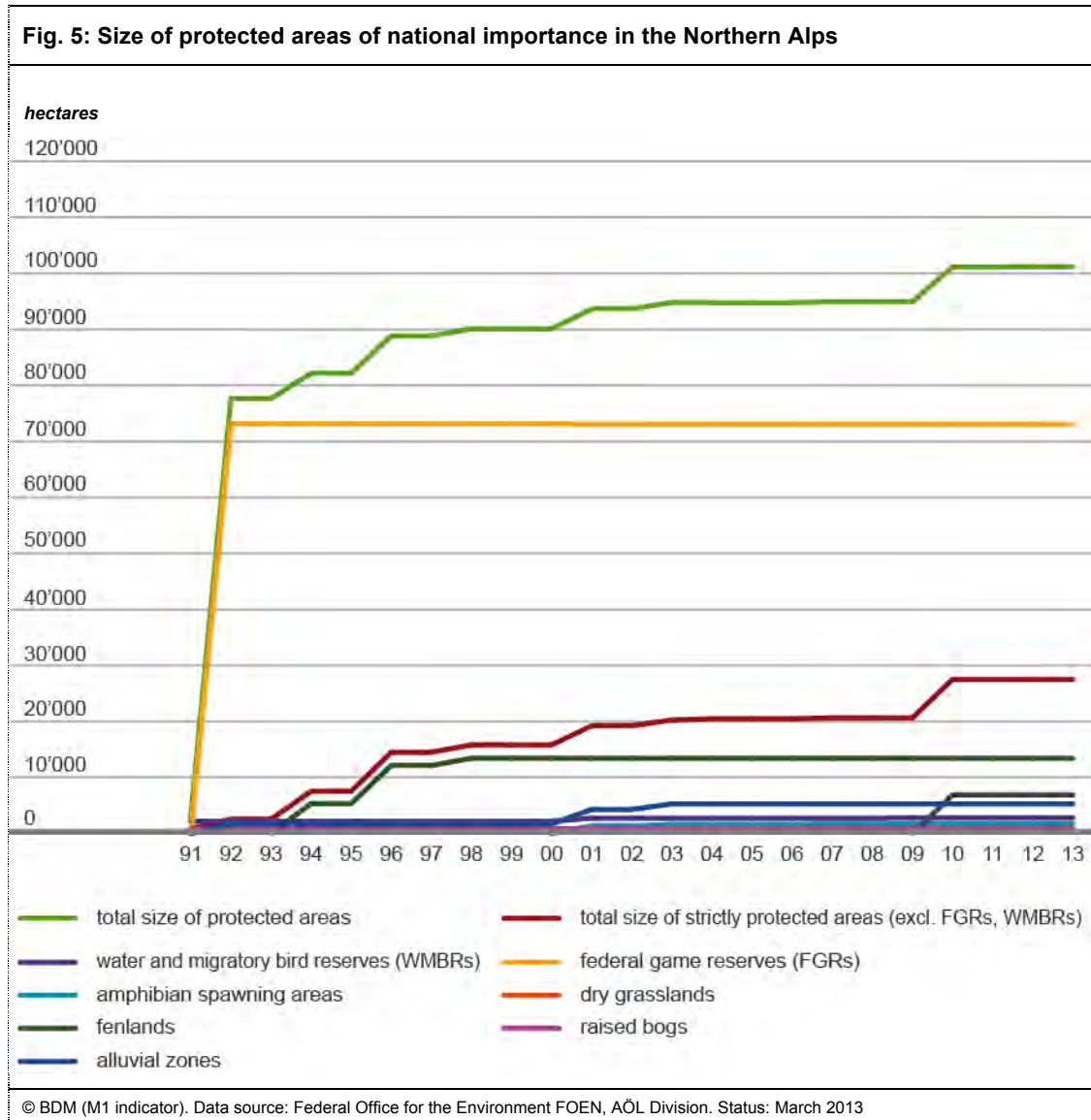
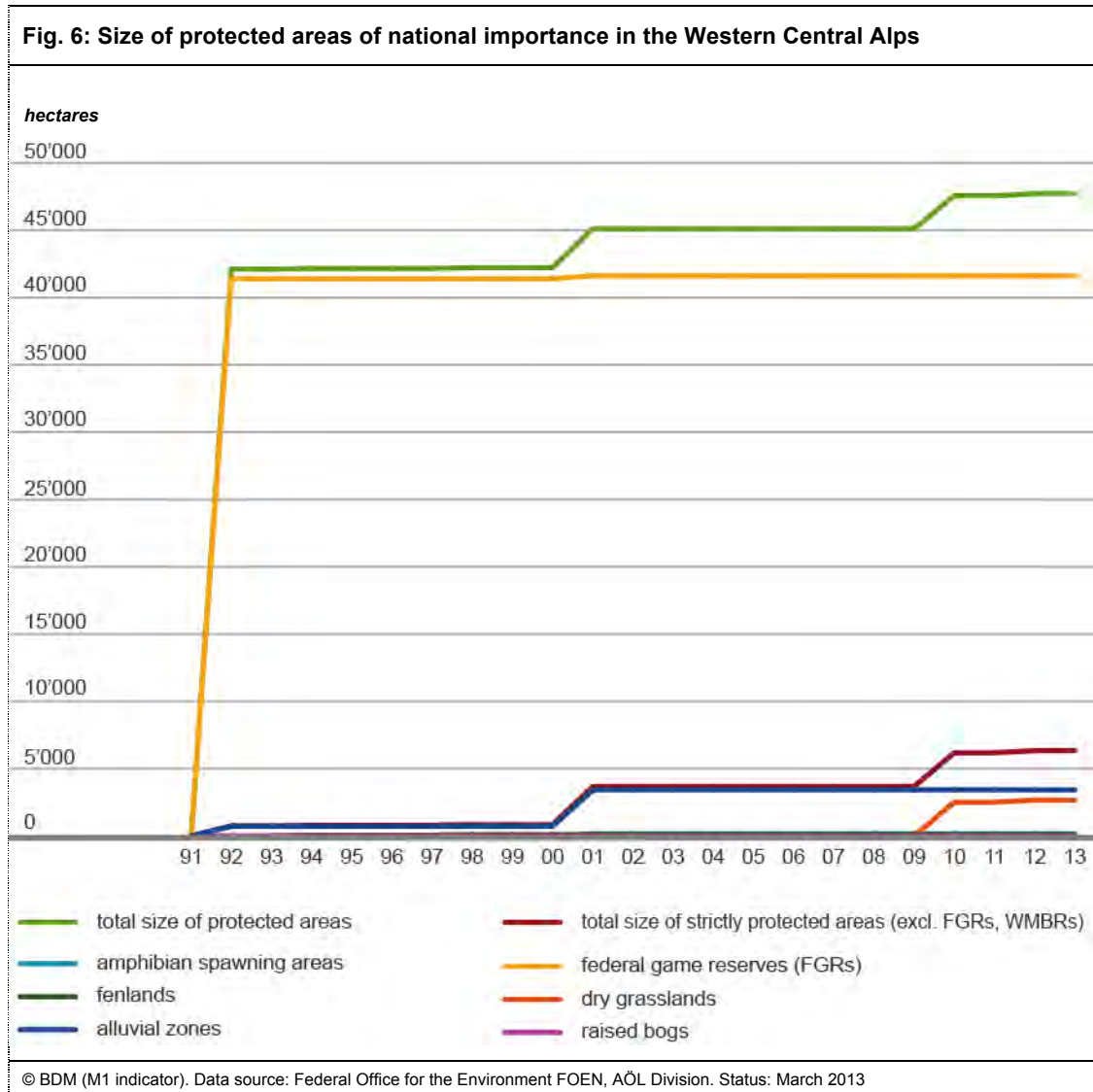


Fig. 4: Size of protected areas of national importance on the Central Plateau







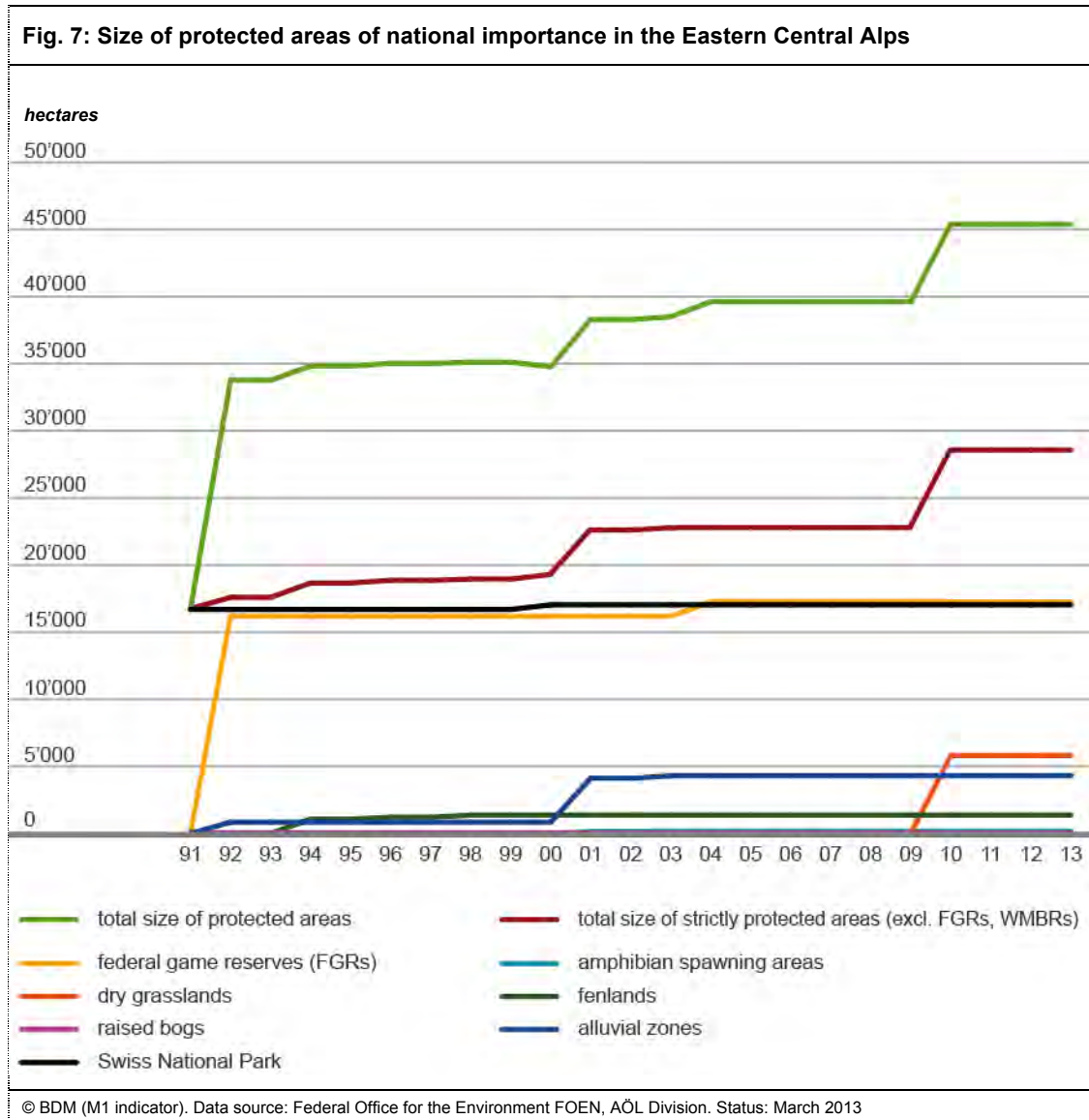
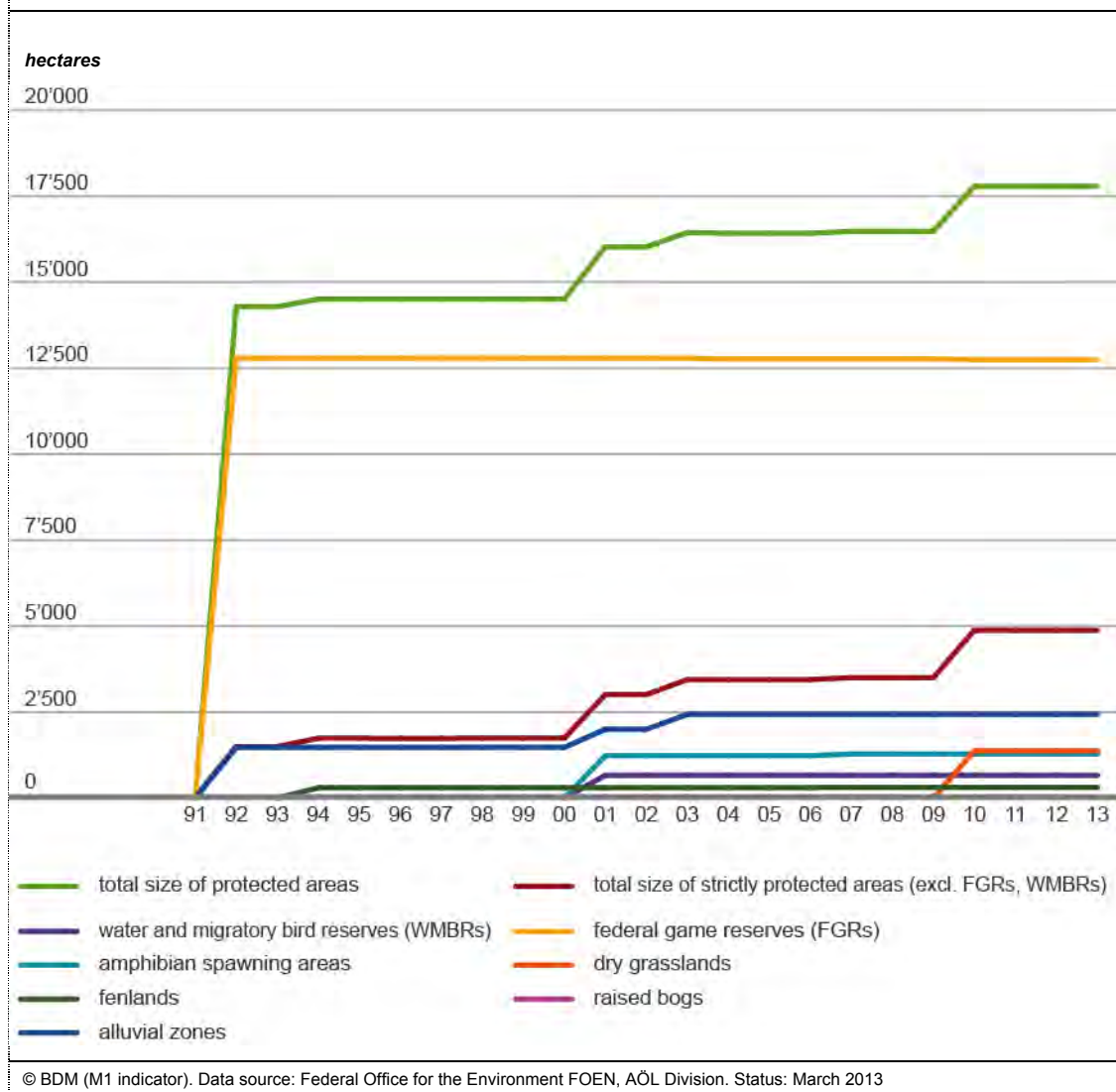


Fig. 8: Size of protected areas of national importance in the Southern Alps



Regional comparison

The two figures below illustrate how individual biogeographical regions compare as regards changes in the size of protected areas in general (fig. 9) and changes in the size of strictly protected areas (fig. 10). Both figures represent net sizes, i.e. areas that are listed in several federal inventories are counted only once.

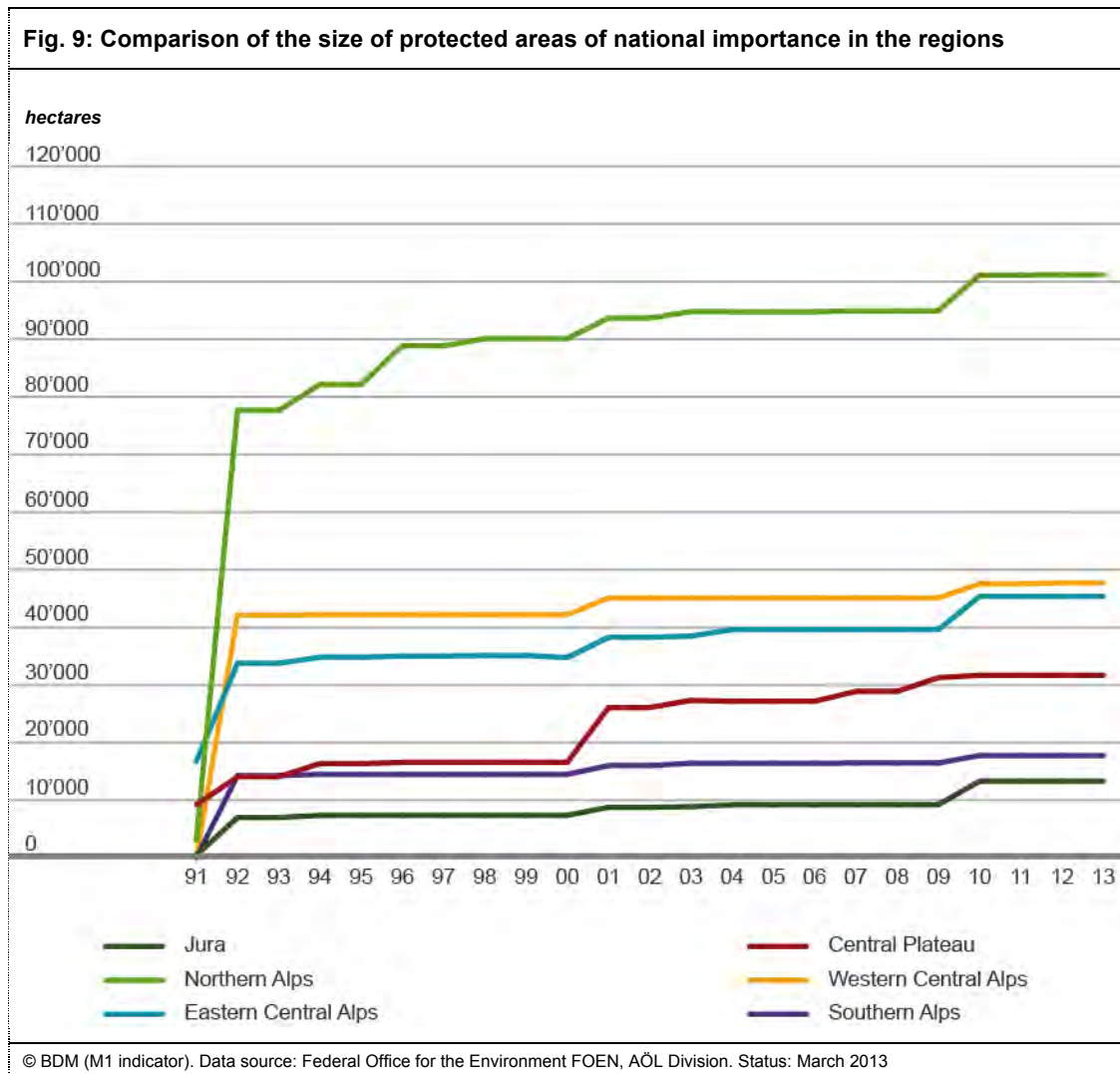
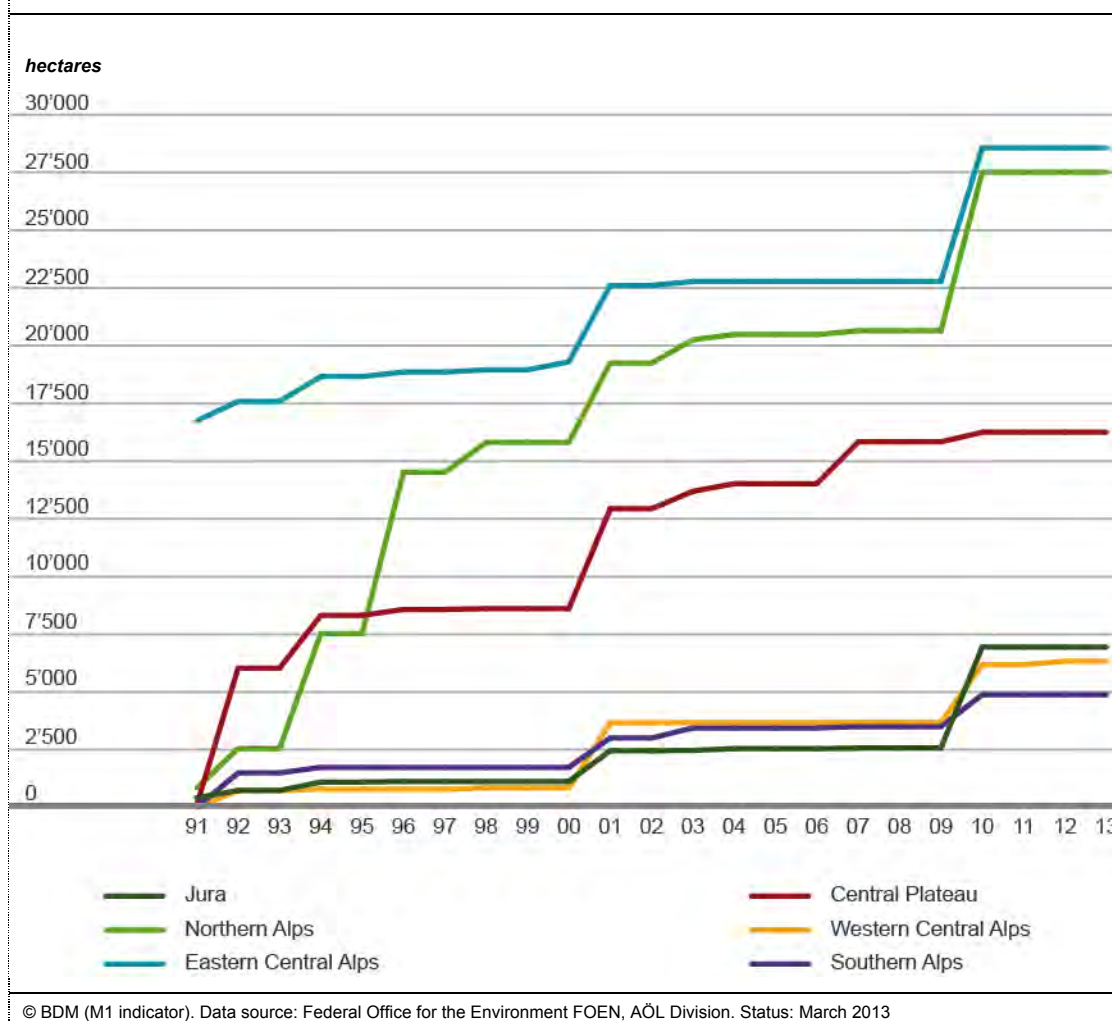


Fig. 10: Comparison of the size of strictly protected areas of national importance in the regions

© BDM (M1 indicator). Data source: Federal Office for the Environment FOEN, AÖL Division. Status: March 2013

Comments

- Since 1991, the size of protected areas of national importance has been increasing in all regions. Above all, it surged in 1992 because the ordinances on federal game reserves and on alluvial zones became effective that year along with the pertaining federal inventories. The increase in 2001 is due to the Federal Inventory of Alluvial zones being enlarged and the Ordinance on Amphibian Spawning Areas being put into force. In 2010, the total size was further enlarged by the Inventory of Dry Grasslands.
- The most marked increase of all protected areas combined was registered in the Northern Alps, which—at 101'000 hectares—also hold the largest size in absolute numbers. In relative terms, the size of protected areas is largest in the Western Central Alps, where they amount to 9.8% of the region's total expanse. However, at 8.8%, their share in the region's total expanse is only slightly smaller in the Northern Alps, followed by the Eastern Central Alps featuring 7.8%. Regarding their respective shares in a region's total expanse, protected areas amount to 3.1% in the Jura, 2.8% on the Central Plateau, and 4.8% in the Southern Alps. Shares are so high in the Western Central Alps in particular because of federal game reserves. In contrast, strictly protected areas make up a mere 13% in that region, with 27% registered in the Northern and the Southern Alps, just over 50% on the Central Plateau and in the Jura, and 63% in the Eastern Central Alps. However, that latter high percentage of strictly protected areas is mainly composed of the Swiss National Park.

- Protected areas of national importance are relatively scarce in the Jura. On the one hand, alluvial zones and fenlands are rare there for geological reasons. On the other hand, the particular geology of the Jura, aided by its climate, also causes raised bogs to occur more frequently than in other regions. Moreover, the Jura's share of protected areas increased significantly as the Inventory of Dry Grasslands was adopted.
- When the Federal Inventory of Fenlands was revised in 1996, the perimeters of certain fenlands in the Jura were reduced. Until 1996, some raised bog sections had been recorded in the Federal Inventory of Fenlands as well, but these sections were removed from the Inventory during the revision. Furthermore, fenland mapping became more precise as of 1996.
- Waterbird and migratory bird reserves as well as amphibian spawning areas are mostly found on the Central Plateau.
- So far, the Central Plateau holds no federal game reserves. Authorities currently discuss the possibility of establishing a federal game reserve in the Jura lowlands, intended to support the Partridge and Brown Hare populations in particular.

Significance for biodiversity

Protecting rare and endangered habitats on a national level helps preserving the basic prerequisite for a large number of animal and plant species to survive. For this reason, any increase in the size of protected areas tends to promote biodiversity and, as a result, make a positive impact. The M1 indicator records protected areas of national importance, provided they are guided by conservation goals closely linked to biodiversity and supply analyzable data. In doing so, M1 documents the legal implementation of habitat conservation, which is intended to safeguard the environment needed by specific species and was explicitly written into law in the 1980s and even more so in the 1990s.

Covering roughly 31% of the country's expanse, Switzerland's forest stands are entitled to overall protection, i.e. freedom of exploitation is limited in favor of sustainable use. While other habitats such as bankside vegetation and waterbodies are also protected by law, they are not registered by federal inventories, and there are no consistent data available. Protected areas of regional or local importance are not monitored by the M1 indicator, either, since these were not established using standardized methods, and their locations and conservation goals are not always primarily geared to maintaining biodiversity. As a result, the total size of protected areas in Switzerland is larger than the size documented by the indicator.

Still, legal (*de jure*) protection does not equal actual (*de facto*) protection. The impact of legal protection depends on whether initiated measures truly achieve their ends. For example, the Ordinance on Alluvial zones stipulates promotion of native plant and animal species typical of alluvial zones. However, only effectiveness monitoring (cf. M2, Z10 and Z11 indicators) will show whether species typical of alluvial zones actually benefit from such conservation measures.

Definition

Changes in the size of nature conservation areas of national importance protected by law.

The M1 indicator only records nature conservation areas that are protected by law on a national level and whose conservation goals are aimed at protecting species diversity.

Supplying the indicator's basic data, federal habitat inventories are compiled applying scientific expertise and using standardized methods for all of Switzerland. Their conservation goals are geared to maintaining biodiversity.

Protected areas of regional or local importance are managed by cantons and communities. Their conservation goals vary and—just like their locations—are not always designed to promote biodiversity. Moreover, there are no consistent accessible data available regarding these areas. For these reasons, the M1 indicator does not include them.

Likewise, landscape protection areas such as moorlands are not taken into account, either, since their conservation goals are not primarily geared to promoting biodiversity.

Surveying methods

Data used to compute changes in the size of protected areas are extracted from the federal inventories of alluvial zones, raised bogs, fenlands, dry grasslands, amphibian spawning areas, waterbird and migratory bird reserves, federal game reserves as well as information on the Swiss National Park.

The total size of areas protected by law on a national level is composed of the sizes of alluvial zones, raised bogs, fenlands, dry grasslands, amphibian spawning areas, waterbird and migratory bird reserves, federal game reserves, and the Swiss National Park. Areas simultaneously protected by several federal inventories are counted only once.

In order to show the development of strictly protected areas on its own, the indicator also computes the total size of strictly protected areas only (excluding federal game reserves and waterbird and migratory bird reserves).

The Federal Inventory of Amphibian Spawning Areas includes both permanent and temporary sites. Temporary sites correspond to perimeters within which actual spawning sites may shift. Only the spawning sites themselves are protected. Hence, only these sites are considered to be protected areas for indicator purposes. Each temporary site is assumed to cover an area of 0.85 hectares. This corresponds to 10% of the mean value of temporary sites recorded in 1994 when the ordinance was being prepared; see Ordinance on Amphibian Spawning Areas of National Importance, Art. 3 (1) (SR 451.34).

Perimeters allowed for damage caused by game as listed in the Federal Inventory of Federal Game Reserves are not included in M1 calculations.

All data are supplied by the FOEN.

For locating protected areas, please use the FOEN's map.bafu.admin.ch application.

Numbers will change once a new federal inventory has been adopted or an existing federal inventory has been revised.

Further information

In charge of this indicator

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

FOEN expert contact: Jürg Schenker, juerg.schenker@bafu.admin.ch, +41 (0)31 322 80 05

Related indicators

- > M2 Size of Secure Protected Areas
- > Z10 (=E1) Size of Valuable Habitats
- > Z11 Quality of Valuable Habitats

Additional sources of information

- > <http://map.bafu.admin.ch> GIS maps for locating nature reserves (text in French and German only)
- > www.bafu.admin.ch/index.html?lang=en FOEN website
- > www.bafu.admin.ch/schutzgebiete-inventare/index.html?lang=en FOEN list of federal inventories (not available in English)
- > www.admin.ch/ch/d/sr/c451_31.html Ordinance on Alluvial zones (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_37.html Ordinance on Dry Grasslands (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/c922_32.html Ordinance on Waterbird and Migratory Bird Reserves (not available in English)
- > www.admin.ch/ch/d/sr/c922_31.html Ordinance on Federal Game Reserves (not available in English)
- > www.admin.ch/ch/d/sr/c454.html Federal Law on the Swiss National Park (not available in English)
- > www.iucn.org IUCN website (International Union for Conservation of Nature and Natural Resources)

This information is based on the German-language document 1090_M1_Basisdaten_2013_V1.doc of March 18, 2013.