



Common farmland birds in Italy

Update of population trends and Farmland Bird Indicator
for the National Rural Network



These publications are dedicated to Paolo Boldrighini, Sergio Frugis, Gaspare Guerrieri, Helmar Schenk and Giuseppe Tormen

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White wagtail by Roberto Becucci



The Farmland Bird Index

In 2018 the FBI indicator declined by 26,5% compared to its initial value. This decline becomes even more alarming if we focus on specialist species, the subset of species used to calculate the Farmland Bird Index whose behaviour and ecology makes them particularly reliant on agricultural habitats: Stonechat populations declined by 72,6%, with the steepest declines in the last ten years, while 73% of Wrynecks, 47% of Skylarks and 68% of Red-backed Shrikes also disappeared.

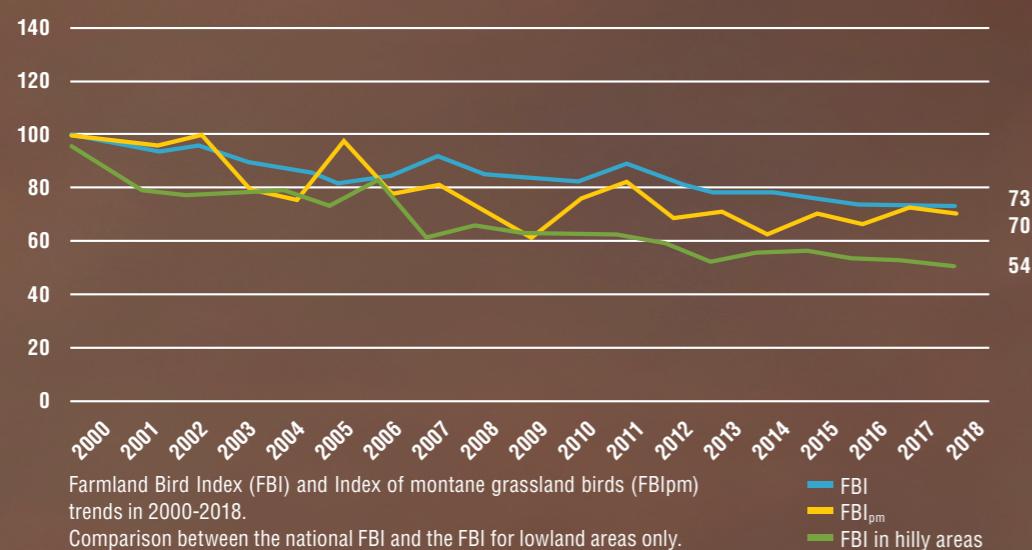
If we narrow our focus on lowland areas only, the Farmland Bird Index has dropped by a frightening 45,7% between 2000 and 2018. Although the goals of the current Common Agricultural Policy, especially as it pertains to rural development, including stemming biodiversity declines in agricultural ecosystems, the FBI project shows that instead the indicators continue to reveal a steady and increasingly marked decline. As was amply illustrated in previous years, such a widespread phenomenon at the national and European scale is a sign of trouble for farmland ecosystems, which cover a significant portion of Italy's territory and host a large share of the nation's biodiversi-

ty. According to the latest ISTAT data (2019), Italy has 12.6 million hectares of agricultural land, accounting for over 42% of the national territory.

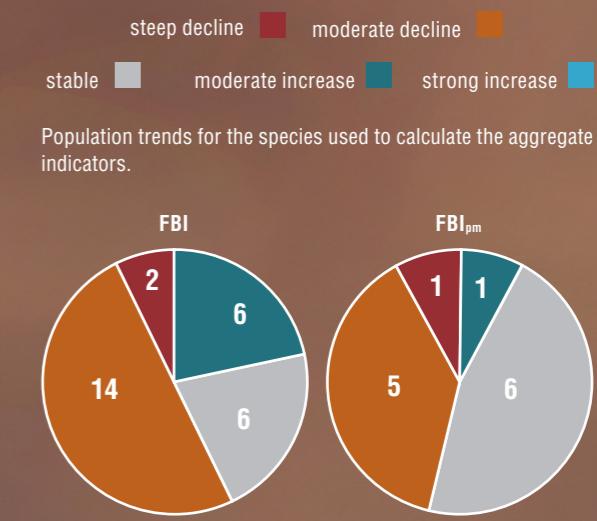
The correlation between the characteristics of animal communities, for which birds are excellent biological indicators, and those of the landscape and its "bill of health" has been extensively proven through numerous ecological studies. For this reason, the worrying trends reflected by these indicators should ring alarm bells in terms of the possible repercussions that the environmental degradation of farmland ecosystems could have on human health. The enormous amount of chemicals pumped into the environment has proven consequences on our health, both with regards to professional or residential exposure and in terms of the food produced in these areas.

Indeed, millions of people live in rural areas, especially in the lowlands, as shown by ISTAT data (2019: 24% of Italy's population lived in rural areas).

In lowland areas, where intensive agriculture dominates and leads to a uniform landscape and a high degree of mechanization, the FBI evidences a very worrying decline that



seems to underscore the negative effects of this model of production. Additionally, numerous studies show that many pesticides have impacts that go far beyond their target species: a particularly suitable example is that of neonicotinoids, which are not only extremely harmful for pollinators such as bees and wasps, but also have effects on human health (they are endocrine disruptors). It should be kept in mind that as a context indicator, the Farmland Bird Index does not just measure population shifts in bird species. It also provides a picture of the overall health of ecosystems, which affects all forms of life living in them, including humans.





¹Houger C. et al., 2006. Economic valuation of a seed dispersal service in the Stockholm National Urban Park, Sweden. *Ecological Economics* 59: 364-374

²Carver E., 2009. Birding in the United States: A demographic and economic analysis. Report 2006-4. U.S. Fish and Wildlife Service, Washington DC

³Cobar A.G.C. et al., 2017. Acute effect of birdwatching on mood states of senior high school students in the physical education setting. *University Annals, Series Physical Education & Sport/Science, Movement & Health* Vol. 17(1): 18-25

⁴Cox D.T.C. et al., 2017. Doses of Neighborhood Nature: the benefits for mental health of living with nature. *Bioscience* 67(2):147-155

⁵Gaston K.J., 2011. Common ecology. *Bioscience* 61(5): 354-362

Common and widespread species, which include many of the species used to calculate the Farmland Bird Index at the national level, play a relatively limited role in determining the species richness of bird communities at broad scales, since they tend to be found nearly anywhere, albeit at varying densities. On the other hand, their contribution to ecological processes is often greater than that of other species, and they play a key role in guaranteeing many crucial ecosystem services, including some that are essential for humans as well. Among the ecosystem services provided by common birds, the first that comes to mind is pest control, or the predation of species considered harmful to agriculture or other human activities. For example, the ability of many common species to effectively prey upon the larvae of insect pests during 'population explosions' and to keep the number of parasites and other crop pests under control makes them valuable allies for farmers. There are many examples of birds keeping insect or rodent numbers under control in cropland, and a growing number of studies has shown, for a wide variety of crops, that the disappearance of birds from farmland results in an increase in damage to crops and/or a decrease in production.

These are not the only contributions made by birds. They can unwittingly transport seeds of plants that depend on fruit-eating birds for dispersal, thus playing a key role in ensuring gene flow for many plant species, and allowing for plants to re-colonize degraded areas. A Swedish study¹, one of numerous such examples, quantified the cost of planting as many new oaks as Eurasian Jays do with their caches of acorns: almost ten thousand dollars per hectare!

Birds can also distribute nutrients with their movements and their excrements, contributing to certain key factors affecting the local vegetation. Geese and seabirds are the most frequently cited birds in this case, but they are certainly not the only ones playing this role.

Certain birds that are often referred to as scavengers remove carcasses and other organic

waste from the environment. Vultures and corvids in particular do so rather efficiently, preventing potential health or hygiene issues. Birds can also serve as environmental engineers, by building nests that are subsequently used by a great variety of other organisms. Nests vary greatly in terms of the type of materials used, their structure, complexity, size, longevity, and usefulness for other animals, which include insects such as beetles and bumblebees, rodents, lizards, snakes and other bird species.

Areas that host a great diversity of birds or unusual species can also serve as tourist attractions. There are regions in which birdwatching tourism is the primary source of income for local populations. In the United States alone, birdwatching – including travel and equipment – is a business worth over USD 30 billion a year.

Finally, the presence of rich and diverse bird communities can make an area a more pleasant to live in, with proven benefits on the human psyche³⁻⁴.

The ecosystem services provided by birds extend well beyond those listed above, since there are countless indirect ones that support or improve other services. Birds can greatly influence food chains from above: the reduction, or worse yet, the disappearance of certain bird populations can trigger cascading effects on ecosystems, leading to a loss of functionality, and ultimately to reduced benefits for humans as well.

Obviously, these valuable services that birds provided us free of charge depend on the presence of a sufficient number of individuals. Many studies have shown that, in spite of a few exceptions, the relationship between the ecosystem services provided by birds and the abundance of birds themselves is usually roughly linear: the more the birds, the more ecosystem services they can effectively deliver. This makes it easy to understand how the population declines in common species that we are witnessing, and that the Farmland Bird Index unequivocally evidences, can have extremely dangerous consequences.

A reduction in the population of common species that may seem minor in percentage terms will translate into millions of individuals lost, with a potentially devastating impact on ecosystems. In the words of the British scientist K.J. Gaston⁵, common species "are at the very heart of the biodiversity crisis" we are experiencing. The population crash in common species we are witnessing in Europe, especially in agricultural habitats, must not be met with indifference, because in addition to Stonechats, Skylarks, and shrikes, we are also losing ecosystem services that are crucial for our own survival.



The table on the following page shows population trends of common birds in Italy between 2000 and 2018; these are the species used to calculate the Farmland Bird Index (FBI) and the Index of montane grassland birds (FBI_{mp}) at the national level.

Species name (common name) and the **Scientific name** are given in the first two columns. In order to make the information contained in the table more legible and accessible, the species are listed alphabetically by common name and not in taxonomic order.

Average annual variation \pm SE (%) represents the average percentage change per year with its standard error (SE). The standard error is a measure of the inaccuracy of the index, and thus is a proxy for its reliability, over the entire monitoring period.

Trend classification 2000-2018 describes, with the use of arrows and colours, population trends classified as follows (definitions recommended by EBCC):

- **strong increase** ▲▲ a trend slope of >1.05 (an increase of more than 5% per year), with the lower confidence limit of the slope >1.05 ;
 - **moderate increase** ▲ a trend slope between 1.00 and ≤ 1.05 (an increase of no more than 5% per year), with the lower confidence limit of the slope between 1.00 and 1.05;
 - **stable** ● a trend slope where the confidence intervals overlap 1 (no significant change), with the lower confidence limit of change >0.95 and upper confidence limit of change <1.05 ;
 - **moderate decline** ▼ a trend slope of ≥ 0.95 and 1.00 (a decline of no more than 5% per year), with the upper confidence limit of the slope between 0.95 and 1.00;

- *steep decline* ▼▼ a trend slope of <0.95 decline of more than 5% per year), with the upper confidence limit of the slope <0.95; A low number of individuals recorded and/or high standard error can make these trends non-significant. Should this happen, the population is prudentially categorized in the lower category for positive trends (*moderate increase instead of strong increase, stable instead of moderate increase*) or in the higher one for negative trends (*moderate decline instead of steep decline, stable instead of moderate decline*).

- *uncertain* ? a trend slope where the confidence intervals overlap 1 (no significant change), with the lower confidence limit of change <0.95 and/or the upper confidence limit of change >1.05.

The **Squares** column reports the number of 10x10 km squares from which data was used to calculate trends for each species, namely the number of squares visited at least twice between 2000-2018 in which the species in question was recorded. This makes it possible to compare sample size between species. A total of 1,360 10x10 km squares were used for the analyses.

The **Indicator** column divides bird species on the basis of their habitat preferences at the national scale:

- species of farmland habitats whose population trends are used to calculate the Farmland Bird Index (FBI),
 - species used to calculate the Index of montane grasslands birds (FBIm).

In order to provide as exhaustive a picture as possible, we also included additional information, drawn from other studies conducted at the national level, on the species for which the project presents population trends.

The **Conservation status** column provides information on each species' conservation status as follows:

- **Favourable conservation status**
Stable or expanding range and population number of pairs and demographic parameters showing no signs of concern, habitat quality and extension are compatible with the species long-term survival;
 - **Inadequate conservation status**
The population or range has declined over the last 10 years (no more than 10%), or the population/range is highly concentrated/fragmented, fluctuating, or lower than the favourable reference values, and/or the extent of their habitat appears to be insufficient with the species long-term survival;
 - **Poor conservation status**
The population or range has declined significantly, or have fallen by more than 10% in the last ten years, or the population is significantly lower than the favourable population reference values, and/or their habitat has been significantly modified.

tly degraded or reduced. For more information on the methodology used for defining the conservation status of Italian birds, see these publications^{1,2}.

Finally, the **Red List** columns indicates the threat status for every species in the 2011 Red List of Italian breeding birds: Critical (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Data Deficient (DD), Least Concern (LC). The threat categories VU, EN and CR are applied – in ascending order from least to most serious - to the species that have a high to critical level of extinction at the national level in the short or middle term; NT is applied to species at concrete risk of qualifying for a threat category in the near future; DD is applied of species for which there is not enough data to evaluate their risk of extinction; LC is applied to species that are not under immediate threat of extinction (but they can still be slowly declining and/or relatively rare). For more information on the categories and criteria used to compile the national Red List please see the relevant publication³.

¹ Brambilla M., Gustin M., Celada C., 2013. Species appeal predicts conservation status. Biol. Conserv. 160, 209–213.

in Italia. Rivista Italiana di Ornitologia, 86 (2), 3-

³ Peronace, V., Cecere, J.G., Gustin, M., Rondinini, C., 2012. Lista Rossa 2011 degli Uccelli Nidificanti in Italia. Avocetta 36: 11-58.

Species name	Scientific name	Annual change ± SE (%)	Trend classification 2000-2018	Squares	Indicator	Conservation status	Red List
Barn Swallow	<i>Hirundo rustica</i>	-1.45 (±0.18)	▼	1254	FBI	■	NT
Black Redstart	<i>Phoenicurus ochruros</i>	1.42 (±0.32)	▲	560	FBI _{pm}	■	LC
Calandra Lark	<i>Melanocorypha calandra</i>	-2.98 (±1.15)	▼	74	FBI	■	VU
Carrion Crow	<i>Corvus corone</i>	-0.73 (±0.60)	●	219	FBI _{pm}	■	LC
Common Kestrel	<i>Falco tinnunculus</i>	0.62 (±0.25)	▲	1117	FBI	■	LC
Common Nightingale	<i>Luscinia megarhynchos</i>	0.08 (±0.15)	●	1039	FBI	■	LC
Common Redpoll	<i>Acanthis flammea</i>	-7.14 (±1.01)	▼▼	90	FBI _{pm}	■	LC
Common Starling	<i>Sturnus vulgaris</i>	0.26 (±0.25)	●	889	FBI	■	LC
Corn Bunting	<i>Emberiza calandra</i>	1.06 (±0.21)	▲	813	FBI	■	LC
Crested Lark	<i>Galerida cristata</i>	-1.15 (±0.22)	●	513	FBI	■	LC
Dunnock	<i>Prunella modularis</i>	-1.00 (±0.53)	●	185	FBI _{pm}	■	LC
Eurasian Golden Oriole	<i>Oriolus oriolus</i>	2.59 (±0.22)	▲	856	FBI	■	LC
Eurasian Hoopoe	<i>Upupa epops</i>	-0.48 (±0.27)	●	834	FBI	■	LC
Eurasian Magpie	<i>Pica pica</i>	2.10 (±0.15)	▲	1045	FBI	■	LC
Eurasian Skylark	<i>Alauda arvensis</i>	-3.86 (±0.23)	▼	738	FBI	■	VU
Eurasian Tree Sparrow	<i>Passer montanus</i>	-2.78 (±0.24)	▼	996	FBI	■	VU
Eurasian Wryneck	<i>Jynx torquilla</i>	-6.58 (±0.45)	▼▼	562	FBI	■	EN
European Goldfinch	<i>Carduelis carduelis</i>	-2.71 (±0.14)	▼	1318	FBI	■	NT
European Greenfinch	<i>Chloris chloris</i>	-3.18 (±0.17)	▼	1198	FBI	■	NT
European Serin	<i>Serinus serinus</i>	-0.10 (±0.14)	●	1256	FBI	■	LC
European Stonechat	<i>Saxicola rubicola</i>	-6.64 (±0.26)	▼▼	916	FBI	■	VU
European Turtle Dove	<i>Streptopelia turtur</i>	-1.08 (±0.17)	▼	1019	FBI	■	LC
Fieldfare	<i>Turdus pilaris</i>	-3.88 (±0.74)	▼	106	FBI _{pm}	■	NT
Garden Warbler	<i>Sylvia borin</i>	-5.82 (±1.07)	▼	106	FBI _{pm}	■	LC
Greater Short-toed Lark	<i>Calandrella brachydactyla</i>	-0.94 (±0.91)	●	133	FBI	■	EN
Hooded Crow	<i>Corvus cornix</i>	1.09 (±0.14)	▲	1232	FBI	■	LC
Italian Sparrow	<i>Passer italiae</i>	-3.20 (±0.17)	▼	1146	FBI	■	VU
Lesser Whitethroat	<i>Sylvia curruca</i>	1.49 (±0.83)	●	132	FBI _{pm}	■	LC
Northern Wheatear	<i>Oenanthe oenanthe</i>	-0.67 (±0.53)	●	223	FBI _{pm}	■	NT
Ortolan Bunting	<i>Emberiza hortulana</i>	-0.10 (±1.10)	●	107	FBI	■	DD
Red-backed Shrike	<i>Lanius collurio</i>	-4.51 (±0.31)	▼	788	FBI	■	VU
Ring Ouzel	<i>Turdus torquatus</i>	-0.62 (±1.00)	●	101	FBI _{pm}	■	LC
Spanish Sparrow	<i>Passer hispaniolensis</i>	-2.95 (±0.41)	▼	165	FBI	■	VU
Spotless Starling	<i>Sturnus unicolor</i>	4.80 (±0.62)	▲	149	FBI	■	LC
Tawny Pipit	<i>Anthus campestris</i>	-4.78 (±0.65)	▼	210	FBI	■	LC
Tree Pipit	<i>Anthus trivialis</i>	0.03 (±0.42)	●	291	FBI _{pm}	■	VU
Water Pipit	<i>Anthus spinolella</i>	-1.79 (±0.51)	▼	140	FBI _{pm}	■	LC
Western Yellow Wagtail	<i>Motacilla flava</i>	-2.26 (±0.36)	▼	313	FBI	■	VU
Whinchat	<i>Saxicola rubetra</i>	-3.41 (±0.85)	▼	131	FBI _{pm}	■	LC
White Wagtail	<i>Motacilla alba</i>	-0.82 (±0.24)	▼	1050	FBI	■	LC
Yellowhammer	<i>Emberiza citrinella</i>	-2.97 (±0.56)	▼	225	FBI _{pm}	■	LC



The Common Agricultural Policy from its origins to the environmental challenges of the 21st century

farming production led to its indiscriminate growth (to the point of creating enormous amounts of surplus food that was either incinerated or sold below cost to third countries) to the detriment of market stability, Europe's financial standing, and the environment, due to the gradual loss of natural areas and the massive use of chemicals to maximize production. Although farmland bird populations were not yet being monitored Europe-wide, their declines were evident as early as the CAP's entry into force, as shown by the longest-running series of the Farmland Bird Index indicator, that of the United Kingdom, which showed a 30% decline between 1970 and the 1990s (which decline neared 60% for specialist species).

By the 1990s, the imbalances created by the CAP became so evident that public opinion was no longer willing to pay for a policy that produced food waste and environmental damage (amounting to the equivalent of about 250€/year per citizen today).

The first major CAP reform (MacSharry reform) was thus implemented in 1992, followed in 2003 by the Fischer reform. Their aim was to decouple subsidies from production, and through Agenda 2000 they acknowledged the potential contribution of agriculture to the conservation of landscapes and the environment, food quality and security, and animal well-being.

The Common Agricultural Policy (CAP) is one of the most important and iconic policies of unified Europe, since it is the EU policy with the longest history and currently absorbs over one-third of the European budget.

Officially established in 1962, its roots lie in the Treaty of Rome (1957), with the aim of restoring the economy and wealth of a continent ravaged by World War II. The CAP's original goals were to increase productivity in order to ensure food security, stabilize the markets, and guarantee an adequate standard of living to farmers and fair prices for consumers.

Rules that awarded very high subsidies to

The CAP's objectives thus became Improving the competitiveness of agriculture, Promoting the quality of agricultural products, Promoting respect for the environment and food security, Promoting rural development.

In 2008 a Health Check of the PAC further adjusted the rules for 2007-2013 (the EU's budget and planning periods are of seven years), which led to the abolition of set-asides, namely the mandatory setting aside of 10% of farm properties to be left uncultivated, which had been introduced in the 1980s to slow down production, but which ended up having environmental value since set-asides provided food and shelter to many animal species. This weakened the environmental value of the PAC, in spite of the introduction of several new environmental goals for rural development (protection of biodiversity and achievement of Kyoto targets) and the adoption of agri-environmental and climate measures.

In spite of these adjustments, the social and environmental performance of the CAP failed to make a turnaround, and after a public consultation (2010) and a performance analysis on the part of the European Court of Auditors (ECA)¹⁻² a new intervention was deemed necessary.

These analyses showed that the CAP's inefficacy in tackling environmental challenges was due in part to certain problems in applying Rural Development Plans, but chiefly due to the fact that crop choices were mostly driven by the first pillar (absorbing about 70% of resources), which still focuses on increasing productivity.

For this reason, in the current 2014-2020 planning period the European Commission has tried to invert direct payments, by linking 30% of them to greening practices that make crop diversification mandatory, and a minimum of 5% of farm areas to be destined to ecological focus areas (EFA), in addition to maintaining permanent meadows. Unfortunately, the efficacy of greening was undermined from the start by excluding certain crops from its application, and by recognizing as EFAs certain types of crops, such as nitrogen-fixing crops. This has been confirmed by an ECA report³ that highlighted how the changes brought about by this reform have been unable to modify the CAP as a whole, since they apply to only 5% of EU farmland areas.

In its analysis of the impact of the EU budget in 2019⁴ the ECA also found that CAP measures have a limited impact in fighting climate change. This inadequacy has been confirmed by an independent study commissioned by BirdLife and EEB's European networks⁵.

Increased awareness on the part of the citizenry and some of the productive sector on the impact of agriculture on health and the environment also clearly emerged from the public consultation carried out by the European Commission in 2017⁶, in which most participants asked for a greater commitment on the part of CAP to solve ongoing environmental crises.

This has led the commission to draft a proposal for post-2020 planning (which legislative proposals were presented on 1 June 2018), partially revising the CAP architecture and introducing some significant new elements. These include the abolition of greening, whose practices were subsumed under conditionality, and the introduction of "eco-schemes", direct payments under the first pillar to farmers who implement practices beneficial for the climate and biodiversity. Additionally, each Member State will have to draw up their own National Strategic Plan, which on the basis of local needs will identify interventions under both pillars to achieve the 9 new goals of the agricultural policy (3 economic goals, 3 environmental goals, and 3 social and health goals).

In order to confirm and strengthen the CAP's environmental ambitions, the new Commission in charge since the 2019 elections identified this policy as a key component of the European Green Deal. Indeed, on 20 May 2020, it issued a steering document for the new CAP together with its Farm to Fork and Biodiversity 2030 strategies.

The Commission's proposed regulations were evaluated and amended by the European Parliament and the Agriculture and Fisheries Council. These three institutions, in a trilogue meeting, will have to reach a final compromise and draft the final regulations. In the meantime, due to accrued delays, the current CAP will be extended for another two years,

postponing the entry into force of the new rules until 2023.

FBI trends at both the European and Italian levels show us that a change of direction is sorely needed, so that the post-2020 CAP can help contribute to achieving the targets of the European Biodiversity 2030 strategy. Two crucially important steps are a 50% re-

duction in the use of chemical fertilizers and pesticides, and returning 10% of farmland areas to nature (hedgerows, lines of trees, wetlands, and flower beds). This is the only way we will once again be able to have a countryside that is filled with life, and ensure a healthy and secure food supply for current and future generations.



¹ Relazione speciale ECA n. 07/2011: Il sostegno agroambientale è ben concepito e gestito in modo soddisfacente?

² Relazione speciale ECA n. 05/2011: il regime di pagamento unico (RPU): aspetti da considerare per migliorare la sana gestione finanziaria

³ Relazione speciale ECA n. 21/2017: "L'inverdimento: un regime di sostegno al reddito più complesso, non ancora efficace sul piano ambientale"

⁴ Relazione della Corte dei conti europea sulla performance del bilancio dell'UE – Situazione alla fine del 2019

⁵ Pe'er G. et al., 2017. Is the CAP fit for purpose? An evidence-based fitness check assessment. Leipzig, German Centre for Integrative Biodiversity Research (iDiv), Halle-Jena-Leipzig

⁶ <https://ec.europa.eu/info/consultations/modernising-and-simplifying-common-agricultural-policy>

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