Promoting coexistence south of the Douro River





Decreasing Socio-Ecological Barriers to Connectivity for Wolves South of the Douro River

LIFE WOLFLUX

@Daniel Allen

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Contents

- 04. Why the need for WolFlux?
- 06. What did we do?
- 07. A precarious existence
- **08.** Food for thought
- 10. Reviving a tradition
- 12. Breaking down social barriers
- 13. Creating coexistence corridors
- 15. Poaching and wildfire prevention
- 17. Restoring a natural balance
- 18. Mapping optimism
- 19. Raising awareness
- 20. Inspiring the rewilders of tomorrow
- 21. Best foot forward
- 22. Policy and research
- 24. LIFE WolFlux by the numbers
- 25. A situation in flux

The Iberian wolf is an iconic apex predator that helps to maintain ecosystem health

Why the need for WolFlux?

The Iberian wolf is a subspecies of grey wolf found only in Portugal and Spain. It is classed as Near Threatened by the IUCN and Endangered in Portugal, with a population that is at an unnaturally low level due to a lack of natural prey, persecution and habitat loss. A combination of social, ecological and geographical factors have combined to isolate and weaken the species, with numbers declining since the beginning of the 20th century. In 1930, Iberian wolves were found across most of Portugal today, the population is severely fragmented and estimated to number only 250-300 animals, scattered across 58 packs, with most residing in the north of the country.

The Portuguese National Wolf Survey, conducted between 2019 and 2021 identified six wolf packs south of the Douro River – representing around 14% of the country's wolf population. Unfavourable conditions threaten the stability of these wide-ranging wolves, affecting their breeding success and survival, as well as the connectivity between packs and the remainder of the Iberian wolf population. There is an urgent need to break down ecological and social barriers to create a more cohesive, resilient and thriving population that can expand and connect with other Iberian wolf populations.



Iberian wolf packs typically consist of a breeding pair and several pups. Packs are territorial, and the average size of a wolf territory is around 170 km2.

When the pups reach full maturity at 2–3 years old, they often travel vast distances in search of a territory of their own. Connectivity is therefore critical to their survival, and this connectivity comes in two forms: corridors of suitable habitat and prey, and corridors of social acceptance. The **LIFE WolFlux** initiative was established to lay the foundations for optimising both, bolstering their population south of the Douro River, and creating better conditions for them to link up with packs over the border in Spain.

The Iberian wolf sits at the top of the food chain, and its presence has far-reaching effects on the ecosystem it inhabits. From regulating the number of wild prey species – such as deer and wild boar – and influencing their movements, to the nutrient enrichment the soil receives from the remains of their kills – healthy Iberian wolf populations are an essential component of a fully functioning ecosystem.

The tendency of wolves to prey on weaker animals can also have a positive effect on the general health of prey populations by removing sick individuals that could otherwise spread disease. Such diseases include tuberculosis and brucellosis, which can be transmitted to livestock. And the benefits they bring can be social and economic too, for wolves can be a boon for wildlife tourism business, with a mystique that few other species can match, as well as being an integral part of the cultural heritage of rural societies.

What did we do?

Conflicts with the livestock husbandry sector, negative public perceptions of the wolf, a lack of wild prey, and habitat loss present the main barriers to wolf conservation in Portugal. LIFE WolFlux set out to address each of these threats, and to promote the socio-economic conditions needed to support a viable wolf subpopulation south of the Douro River.

> The initiative implemented a series of actions over six years to reduce these threats, including:



Promoting coexistence using livestock quardian dogs and electric fencing.



Conducting a genetic analysis of Iberian wolves south of the Douro River.



Reducing incidents of poaching and human-caused fires.



Implementing a range of educational measures to increase tolerance and encourage positive attitudes towards wolves.



Contributing to a new national Iberian wolf survey.



Increasing the availability of wild prey and improving awareness and knowledge of prey species such as roe deer.



Developing an enterprise strategy to promote and demonstrate the economic potential and cultural value of the Iberian wolf.

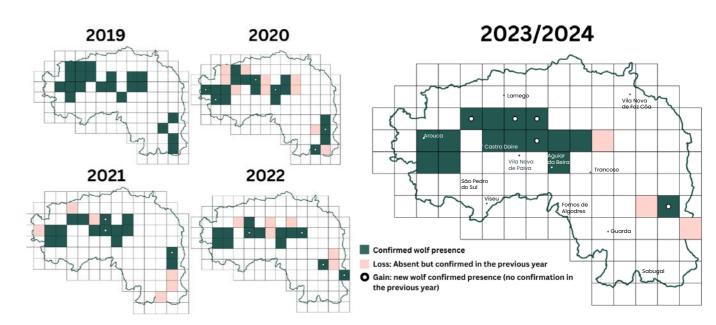
A precarious existence

A lack of data meant it was necessary to assess the size and genetic health of the Iberian wolf population south of the Douro at the beginning of the initiative. From this, any problems of connectivity between packs could be identified. Camera traps were set up to record observations throughout the region, scats collected, and saliva obtained from livestock carcasses, in collaboration with the ICNF, Portugal's national authority for nature conservation, and Zoo Logical, which conducted the fieldwork. Samples were then sent to the University of Aveiro for analysis.

Initial findings revealed the Douro subpopulation to be unstable, with no signs of recovery and a reduction in both range and confirmed packs when compared to previous studies. There was also little evidence of a genetic exchange taking place between wolves found along the Portugal-Spain border area and in the western region. Only 29% of their range overlapped with protected areas, which highlighted a need to focus on land outside of the Natura 2000 network.

Genetic sampling was also carried out to look for any evidence of wolf-dog hybridisation, but fortunately none was found in the study area. Nevertheless, hybridisation has previously been detected in the area prior to the start of LIFE WolFlux, and this remains a threat to the future of the Iberian wolf that warrants further investigation.

Wolf population trend shows a growing instability



Food for thought

It was also crucial to find out about the diet of the wolves in the study area at the start of the initiative. From analysis of their scat, the **LIFE WolFlux** team was able to build up a clear understanding of their preferred prey, the diversity of their prey, and to what degree they are predating on livestock.

This also highlighted areas where there was a particular lack of wild prey and a high incidence of livestock predation. Efforts could then be made to reduce this predation.





Biologist Duarte Cadete and his scent detection dog Alice search for signs of wolf presence.





36 wolf scats were analysed in 2020 and a further 20 studied in 2024 to show how wolf diet had changed during the initiative. Wild boar remained at approximately the same level of 15-20%, while no rabbits, hares or mesocarnivores – small to medium-sized mammals such as the badger – were detected, in contrast to the previous study.

The 2024 study also found a higher proportion of goats and sheep in in their diet – however, the percentage of wild prey had increased slightly since 2020: from 20–25% to 25–30%.

One important result that came out of the 2024 study showed that roe deer now accounted for around 10% of wolf prey – a key species that was absent from the 2020 field survey findings.

Encouragingly, a comparison of the feeding habits of one pack between 2020 and 2024 revealed an increase in predation on wild prey, from 14 to 33%. But the generally low level of wild prey found underlines the need for future reinforcement of the roe deer and recovery of other wild prey populations such as red deer.

An Estrela guardian dog

Reviving a tradition

Preparations were also made to implement damage prevention measures and best practices for dealing with instances of wolves preying on livestock and domesticated animals.

Areas with a high degree of past and current conflict were identified, and work began in direct collaboration with the farmers/landowners to minimise further conflict. This included contacting shepherds who breed the native Serra de Estrela and Cão de Gado Transmontano guardian dogs.

Another key objective of this work was to assess the impact of the compensation scheme established in 2017 to reimburse farmers for the loss of livestock due to wolf predation and evaluate how this has influenced public attitudes and tolerance towards the wolves.

A partnership was formed with Grupo Lobo – a Portuguese NGO that works to protect Iberian wolves and their habitat – to select and integrate livestock guardian dogs with shepherds across the area covered by the initiative.

The ancient breeds were introduced into flocks as puppies so that a strong mutual bond develops – a practice known to have been carried out for centuries in this region.





A total of 108 livestock guardian dogs have now been handed over to local farmers – fulfilling an impressive target. While the dogs' presence cannot completely eliminate the possibility of a wolf attack, many farmers have reported no such incidents since acquiring them.

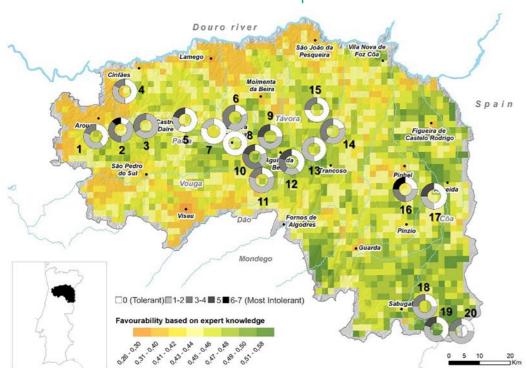
As well as providing general support and advice to ease the dog's integration into a flock, Rewilding Portugal covers the initial veterinary and insurance costs of each dog for two years, as well as providing the farmer with a year's supply of dog food.



Livestock owner Marta Machorro takes receipt of a new guardian dog. However, a quarter of respondents showed some degree of intolerance towards the presence of wolves, highlighting the need for more education, and further engagement with communities to better understand how coexistence levels could be enhanced. On the other hand, the supply of livestock guardian dogs was widely welcomed.

When asked about the benefits of having Iberian wolves in the landscape, less than half could pinpoint any; with only a few mentioning the potential of wolf-related tourism. A map of the so-cio-economic barriers to wolf connectivity was also produced, along with a habitat suitability study using a Geographic Information System [GIS].

Map of habitat suitability and index of tolerance towards Iberian wolves in the landscape



Source of data:: Link et al. 2021, Cadete et al. 2020, Aliácar et al. 2020

Creating coexistence corridors

For the Iberian wolf to thrive, coexistence is key. The LIFE WolFlux initiative has implemented a range of practical measures to improve coexistence in the long-term, replacing conflict with tolerance and understanding. In doing so, these measures address the main threats to the Iberian wolf south of the Douro River, so that the wolf packs of the future can roam freely and ultimately connect with other wolves in the wider region.

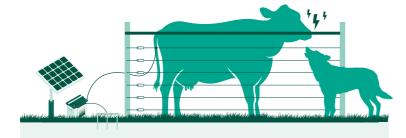
Two veterinarians were trained by Grupo Lobo to work with farmers on developing best practices for livestock protection methods – with the core focus being how to select and integrate livestock protection dogs. As part of the

training, the vets had the opportunity to visit the Gran Sasso National Park in Italy, while farmers visited sites in Portugal where preventive measures have been implemented successfully.

131 farmers in the LIFE WolFlux area were given direct support, with advice given that included keeping livestock in small pastures and using temporary enclosures for vulnerable animals. In total, efforts carried out as part of the initiative saw 108 livestock guardian dogs integrated with farmers, while 51 metallic or electric fences (fixed and mobile) were installed. One of the initiative's main achievements was the uptake of electric fencing, which was not commonly used in the past.



The farmers highlighted that the main advantage of working with livestock guardian dogs is their reassuring presence, coupled with an ability to deter attacks from wolves and other dogs. 81% of farmers who had previously experienced wolf-related damage reported a reduction in attacks following the installation of fencing, with 69% attributing it directly to the fencing.





Livestock breeders share best practice damage prevention measures with their peers in the field.



Poaching and wildfire prevention

To reduce the threats of poaching, poisoning and fires, a mobile surveillance and protection team was established by Rewilding Portugal.

Covering thousands of kilometres every year, the team's rangers seek out snares, poisoned baits and suspicious activity, while monitoring the landscape for wildfires, and mitigating wildfire risk. Between 1997 and 2019, seven wolf deaths were attributed to snares south of the Douro River, although the actual number is likely to be higher. The rangers are the frontline defence and deterrent needed to give nature the best chance to rebound; over the course of **LIFE WolFlux**, they found and removed 36 illegal snares, as well as one unlicensed cage trap.



Rewilding Portugal's ranger surveillance team.

15

14

Surveillance successes

Rewilding Portugal's rapid, collaborative communication of poaching cases led to two training sessions being attended by 30 members of the authority. A network of wildlife ambassadors was also built up to assist with the dissemination of information about **LIFE WolFlux** in local communities

Ambassadors included representatives from the hunting and livestock breeding organisations, as well as citizens interested in the initiative who became advocates for the work.

36

Snares registered and reported to the authorities

03

Prosecutions initiated

09

Attacks on livestock supported

23

Case of poisoning

registered and

reported to the

authorities

Fires assisted

16

03

Cases of stray dog attacks on livestock investigated and communicated to the authorities

02

Injured animals assisted

01

Illegal trap registered and reported to the authorities

3(

Members of GNR/SEPNA (policy authority for nature conservation) trained on wolf biology, national and European legislation for the wolf, and species identification

Restoring a natural balance

LIFE WolFlux set in motion a range of actions to boost numbers of roe deer - a preferred prey species for the Iberian wolf. A lack of wild prey means Iberian wolves often turn their attention to livestock, causing coexistence challenges and hindering their conservation and recovery.

As this has been the case throughout the area south of the Douro River since the 1940s, preliminary steps were taken during the initiative to reintroduce roe deer to sites where there was a low density, or where the species was absent, in collaboration with local hunting organisations.

The reintroduction of roe deer would have restored predator-prey dynamics, helping to

enhance the health and functionality of the ecosystem. Unfortunately, the LIFE WolFlux proposal to reintroduce roe deer was rejected by the necessary authorities, leading the team to focus on native habitat restoration.

54 hectares of native woodland was allowed to naturally regenerate, while the risk of wildfire was managed by the selective removal of shrubs

47 new ponds were also restored or created – a vital lifeline during periods of drought – as well as the creation of 42 hectares of permanent open grassland that benefits prey species such as roe deer, rabbit and partridge.



17

Mapping optimism

The distribution and abundance of roe deer and wild boar – another important Iberian wolf prey species – was mapped from camera traps and surveys of their droppings. The resulting data showed both species are widely distributed across the eastern part of the area covered by the initiative, while red deer were restricted to the south–east, in the Malcata mountain range. From baseline figures obtained at the beginning of the initiative, roe deer numbers in central and western areas were found to have declined, highlighting a need to reinforce their populations there.

However, in areas where restoration efforts have taken place, roe deer numbers were found to have increased between 2019 and 2022-2023 - notably at sites where a higher degree of restoration had been carried out, including Vale Carapito (CAR), Ermo das Águias

(ER), and Vila Nova de Paiva (VNP). A roe deer recovery management plan was also implemented in Vila Nova de Paiva, incorporating five hunting associations and 15,651 hectares. Involving the hunters in roe deer conservation – through monitoring and poaching prevention – will help to establish a greater level of abundance for the species. Sustainable hunting quotas have been agreed for when numbers reach a healthy level.

Encouraging news also came out of Serra de Estrela Natural Park, where the roe deer population had not only rebounded – but increased – since an extensive fire there in 2022. There is also some evidence that red deer are dispersing from Malcata and Serra da Lousã into the WolFlux area, while wild boar increased in number at every site in the study, which bodes well for the future of the Iberian wolf.

Relative Abundance Index average per area (standard deviation)	2019-2020 (A4 Report)		2022-2023	
	Roe deer	Wild boar	Roe deer	Wild boar
Vale Carapito	8.96 (21.08)	8.97 (13.77)	17.04 (17.81)	15.48 (40.09)
Vila Nova de Foz Côa	3.41 (11.55)	11.87 (39.88)	5.29 (11.66)	19.26 (26.98)
Ermo das Águias	2.99 (6.01)	4.04 (6.07)	10.14 (18.37)	27.25 (36.75)
Serra da Estrela	0.22 (0.86)	9.10 (10.15)	8.3 (13.04)	11.6 (16.22)
Trancoso and Mêda	0.61 (1.26)	3.38 (6.88)	1.4 (2.80)	13.2 (18.13)
Vila Nova de Paiva	0.15 (0.79)	1.13 (3.05)	2.2 (8.43)	16.0 (22.60)

Source of data:: Carvalho et al. 2020 and Carvalho et al. 2023

The highest abundance values for each species are highlighted in blue and the lowest in light green.

Raising awareness

Winning over hearts and minds is a critical part of any large carnivore initiative, with a need to educate and inform being key to its success. This is especially true when it comes to the wolf – arguably one of the world's most misunderstood animals – which is often portrayed in a negative manner by the media, and the victim of entrenched public attitudes rooted in fiction, not fact.

The LIFE WolFlux team set out to change this perception, to give Iberian wolf comeback every chance of success through a range of methods and material that included:

- An awareness programme for local and national stakeholders to gauge reaction and get their points of view, including transboundary seminars and field visits. This included discussions and an exchange of knowledge on Iberian wolf management and protection through reinforcing cooperation, from which a range of practical conclusions and priorities were agreed.
- Transboundary seminars held with authorities and relevant organisations from Portugal and Spain to discuss Iberian wolf management and protection and reinforce cooperation.
- Photographic, video and print material disseminated throughout the area covered by the initiative, as well as nationally and internationally.
- Rewilding documentaries: A New Path for Nature in Portugal, and Wilder Côa, which collectively received 10 film festival nominations.

- LIFE WolFlux section developed on Rewilding Portugal's website as the central communications platform, providing an overview of the initiative, actions being undertaken, and news updates.
- Collaboration protocol signed with the digital platform www.loboibérico.pt with the aim of informing and protecting this species and its recovery in Portuguese territory, particularly south of the Douro River.
- Nature awareness and education programme – the Lupi EcoClubs – developed for children in collaboration with primary and secondary schools.
- Local, regional and national media partnerships established to promote positive news angles





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Inspiring the rewilders of tomorrow

As part of the LIFE WolFlux awareness campaign, ATNatureza worked with 15 primary and secondary schools in different municipalities to run extra-curricular clubs. These taught local children about nature conservation and rewilding – including making them aware of Iberian wolves and the need to conserve them.

Called Lupi EcoClubs, they combined online and face to face learning with field visits to the

Faia Brava Reserve, where the children were introduced to the plant and animal life on their doorstep.

A total of **978 pupils participated** in these clubs, with some having the opportunity to meet local shepherds and see the measures in place to prevent wolf attacks on livestock. This was a valuable exercise in nurturing a sense of care for wolves, wildlife, and nature in general.

A LUPI Eco Club field trip to the Faia Brave Reserve.



Best foot forward

Nurturing coexistence through socio-economic initiatives has also been an important component of the LIFE WolFlux initiative. A three-year collaboration between the German sustainable footwear company Wildling Shoes and Rewilding Portugal embodied this approach, engaging 11 shepherds along the way to create the ultimate wool-based footwear.

By enhancing the market value of the wool which goes into every shoe, this helps to boost the profits of farmers – money that can then be put towards the costs of livestock guardian dogs and electric fences.

Apart from paying for the wool, **Wildling shoes** also covers the costs of shearing, bringing livestock breeders an average gain of 800€/year.



Perto, the first shoe model launched through this programme



Marco Pinto - one of the livestock breeders working with Wildling Shoes.

Sowing the seeds for wolf tourism

Promoting responsible wolf-related tourism south of the Douro River was a key action of the initiative. Eight nature tourism businesses in the area with an interest in the Iberian wolf were identified. Business plans for each were then developed, with four companies implementing them. Three of the organisations went on to provide information on the income received, amounting to over 20,000 euros in three years, highlighting the considerable growth potential of this sector.

A guidebook for Iberian wolf tourism was published, providing an engaging introduction to the species and landscape in which it roams. It also included important information about their behaviour and what to expect from a wolf tourism experience. Guide training dedicated to the wolf was also carried out, with members of Rewilding Portugal, Rewilding Europe, and Nature Tourism Development meeting to form

best practice guidelines for responsibly watching this protected species without disturbance. It was an opportunity to hear from those who are already working in regions of Spain where wolf tourism is a lucrative business – with positive impacts on the local communities. Valuable insights were gained that will help to steer wolf tourism down the best path in the future.

LIFE WolFlux also supported the creation of a website to market products from local companies belonging to the Wild Côa Network that have positive coexistence practices with wild-life. Members of this network also act as wildlife ambassadors, as they value and highlight the importance that wildlife and wolves can have in the economic development of rural areas.

Of the **60 current members** of this network, **32** are dedicated to agricultural land and livestock production.





Policy and Research

Results from the **LIFE WolFlux** initiative have been presented in **12 posters** and oral communications for national and international congresses, and have contributed to four peer-reviewed articles and two technical articles.

A social survey carried out at the beginning of the initiative identified a clear need for a fair and effective damage compensation scheme, which would enable swift payouts to be made and foster long-term coexistence with the Iberian wolf. A number of deficiencies were uncovered with the current system that required immediate attention, which was communicated by the LIFE WolFlux team to the relevant authorities. A public letter signed by 14 environmental NGOs calling for the system to be improved was sent to the Secretary of State for Environment in 2022 and shared with the media.

LIFE WolFlux also gathered information on the need for livestock guardian dog legislation to be incorporated into policy which currently imposes restrictions on them that are incompatible with their function. One key outcome from discussions between relevant organisations was a need for livestock guardian dogs to be given a special status similar to other working dogs – such as guide dogs – and for veterinary legislation to reflect their specialised function.

Following a webinar on the topic in 2021 involving the ICNF and Grupo Lobo, and experiences gained throughout the initiative, key learnings were identified. These have formed the basis of a new legislative proposal, put together in cooperation with various stakeholders to be submitted within the scope of the new LIFE LUPI LYNX initiative.







LIFE WolFlux

by the numbers

And 17 wolf predations genetically confirmed

108 Suggested with

36 sillegal snares removed

52 September 1995 September 2015 S

livestock



117 People interviewed about

attitudes towards wolves

54

Hectares of **native woodland** under restoration

42

Hectares of **permanent pasture** created

16
Wildlife guides
trained



47

New ponds created

Business Plans developed

for nature tourism

participated in brands to add value to their products.

Achievements and recommendations

- Implementing the most collaborative and extensive wolf monitoring framework ever carried out south of the Douro River, studying all packs from 2019 to 2024 to build up a complete picture of their status in the area.
- 2. Damage prevention measures extensively implemented (108 guardian dogs and 52 fences) simultaneously in the territories of all packs with support for 142 livestock breeders.
- 3. Predation hotspots and areas of recolonisation identified and mapped over five years, with a greater scope than ever before.
- 4. For the first time ever, a civil surveillance team systematically searched the region for snares. Previous efforts had focused mainly on poison.
- The initiative created the first global hunting management plan for roe deer specially designed to increase wolf prey. The plan has positively impacted over 15,000 hectares of habitat where the recovery of wild prey is essential.
- 6. More than 50 hectares of woodland, 40 hectares of pastures and 47 ponds have been created or are being restored. The measures implemented have positively influenced roe deer numbers, which have doubled or tripled compared with densities before the initiative started.
- The initiative has incorporated an economic dimension to promote socio-economic development through nature, creating incentives for farmers to coexist with wolves by adding value to their livestock.
- 8. The initiative has engaged with a broad audience of stakeholders, produced a variety of communications materials, and had an ever-present Rewilding Portugal team on the ground supporting and working side by side with livestock breeders, hunters, entrepreneurs and local authorities.

26

27

Recommendations

The key takeaway from six years working with the wolf subpopulation south of the Douro River is that bolder conservation efforts are needed to avoid the local extinction of wolves here in the medium to long-term. Deeper engagement, compromise and collaboration with public institutions, conservation NGOs, academia, farmers, farming associations, and communities is urgently required. LIFE WolFlux has highlighted the severity of the situation, and the need for a rapid change in approach by the Portuguese government to secure the Iberian wolf's long-term future.

LIFE WolFlux makes the following recommendations to secure a better future for this iconic and ecologically important species.

- Dedicate more funds of the Common Agricultural Policy and other financial instruments to prevent wolf-related damage.
- Change the wolf damage compensation system through a participatory process to reach a social consensus with the main stakeholders.
 Fair compensation must go hand-in-hand with the promotion and implementation of damage prevention measures.
- Increasing abundance and diversity of wild prey. Despite roe deer numbers increasing, densities are far from where they need to be in many areas. Other species like red deer or Iberian ibex are absent or in very low densities in the area covered by the initiative.
- Reduce and remove direct and indirect (snares) poaching. More resources and collaboration is needed to reach this objective. Legislation needs to be enforced on the ground, and more preventive patrolling carried out in conflict situations.
- Assess the impact of motorways and improve connectivity where needed.
- More investment is needed in creating nature-based and wolf-based economies that bring benefits to communities that live alongside wolves.

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- Wildling Shoes
- · Plataforma Loboibérico.pt

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