



# THE URGENT NEED TO PROTECT AND CONSERVE WETLANDS FOR THE FUTURE OF MEDITERRANEAN PEOPLE, NATURE AND ECONOMIES

Wetland ecosystem services values advocacy paper

*June 2022*



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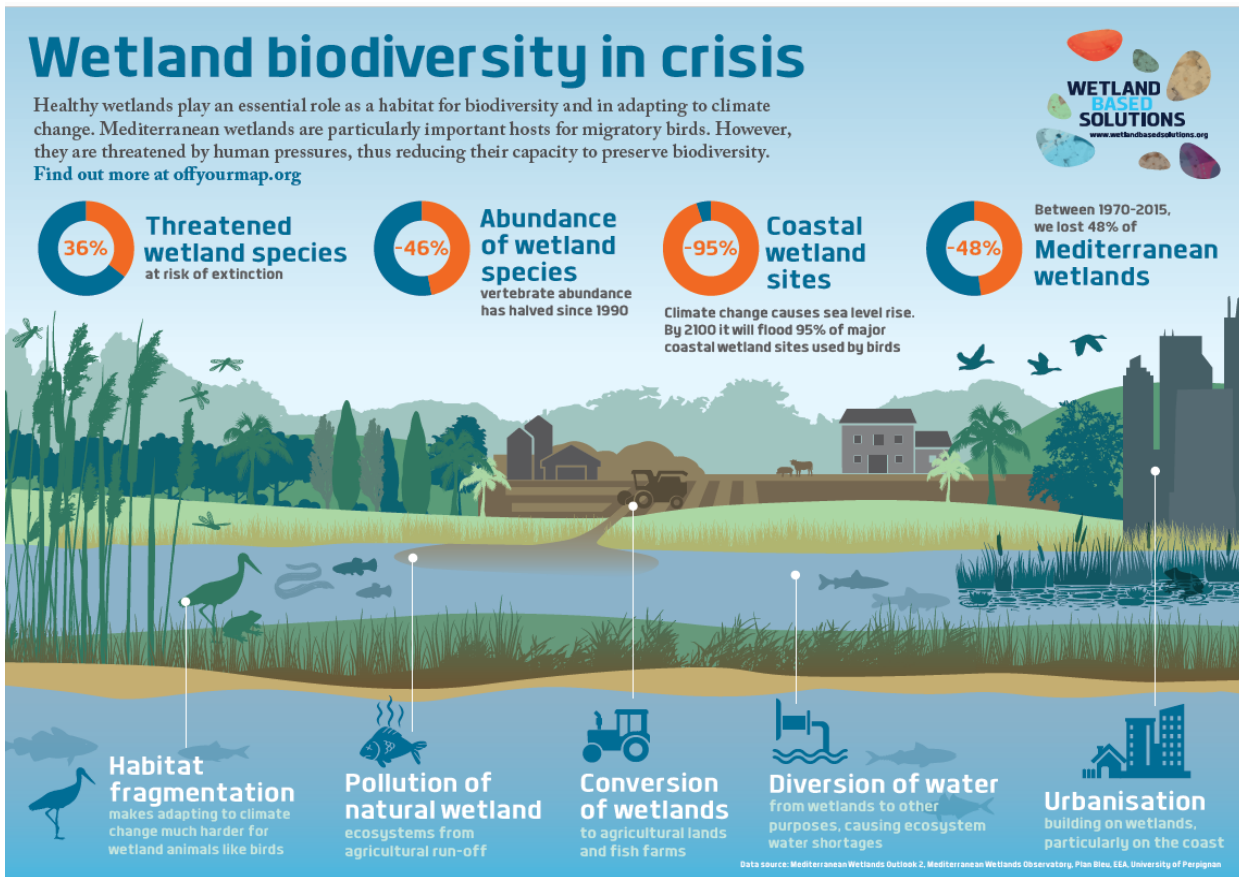
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## 01. THE NEED FOR URGENT ACTION

1. Healthy wetlands are vital for Mediterranean society, not only for the rich biodiversity they host, but also for the multiple benefits they provide to humanity, especially for climate change mitigation and adaptation.
2. Wetlands ensure water and food security for millions of Mediterranean people by supporting the livelihoods of local communities, purifying water from pollutants, providing drinking water for humans and livestock and by supplying water for crops, industry, and energy production. Furthermore, wetlands, particularly in the Mediterranean, are important cultural landscapes that are closely linked to local communities, providing that intangible 'sense of place'.
3. Wetland degradation is a major pressure in the Mediterranean, with two-thirds of the region's wetland areas drained during the last century.
4. Wetland-dependent species are vanishing, 36% of which are threatened with extinction (Zribi et al., 2020)
5. Mediterranean people are also at risk. Actions are urgently needed to tackle the intensifying ecological, water and climatic 'triple' crisis, exasperated by degraded wetlands, that is already impacting the region and to counter upcoming threats such as loss of ecosystem services, loss of land, crop failure, water pollution and heat mortality (IPCC report, 2022).

### WHY THIS PAPER IS IMPORTANT

This paper is an essential read to understand why these vital Mediterranean wetland ecosystems are disappearing, and how they can be an important solution to addressing the 'triple' crisis. Specifically, and building on the latest Mediterranean wetland ecosystem mapping and assessment report (Trombetti et al., 2022) and other recent findings, tools and strategies, this advocacy paper guides decision makers at all levels on how to activate the transformative changes that are now required to scale up wetland ecosystem conservation and restoration. The resilience of Mediterranean countries depends on it. The quality of life for millions of people in coastal communities, as well as the socio-economic and political stability of the region, relies on the decisions and transformative actions applied over the coming years.



© This infographic was developed jointly by MedWet, MWO and IUCN Mediterranean



Figure 1 – Threats to Mediterranean wetland biodiversity (This infographic was produced within the Wetland-based Solutions project - [www.wetlandbasedsolutions.org](http://www.wetlandbasedsolutions.org))





## 02. TRANSFORMATIVE ACTIONS TO 'BEND' THE TRENDS

### WHAT TRANSFORMATION ACTIONS CAN BE TAKEN TO 'BEND' THE TRENDS?

Mediterranean countries are probably facing the most severe climatic and environmental crises in human history (MedECC, 2020). Severe societal challenges will increase in the decades to come: water scarcity, food security, human health, disaster risks, economic and social development, all need to be decisively addressed.

To ensure better resilience of Mediterranean people and economies, transformative changes in management and perception, in particular the idea that water is no longer an unlimited resource, and that wetlands, when in a good condition, have a vital role to play in our responses to climatic and environmental challenges, need to be integrated at all levels of society and across all economic sectors. It is crucial to put Mediterranean people at the centre of actions to protect wetlands as it is well regarded that properly incentivised and involved, local communities are the best guardians of the natural resources that they depend on for their well-being and livelihoods.

### KEY MESSAGES TO GUIDE MEDITERRANEAN STAKEHOLDERS IN THEIR EFFORTS:



Wetlands as Nature-based Solutions (NbS) should be mainstreamed into environmental and sectoral policies.

The sustainable use and restoration of wetlands are efficient and cost-effective Nature-based Solutions (NbS) (UNEP/MAP & Plan Bleu, 2020). According to the IUCN definition, NbS are “actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits” (Cohen-Shacham et al., 2016).

NbS concepts are gaining traction internationally, notably as part of the UN Decade on Ecosystem Restoration and the Glasgow COP26, and within the EU Biodiversity and Climate Change Adaptation Strategies. However, the potential of wetlands as NbS still needs to be

better captured by decision makers in the Mediterranean (Rigaud A., 2022). Wetland conservation should be mainstreamed and healthy wetlands seen as major assets that are often more cost-competitive than grey infrastructure (Klauschen, 2019). It is unlikely that conventional infrastructure alone will cope effectively with the continuous, dynamic and challenging climatic and environmental changes faced. Further, in contrast to conventional solutions, whose performance drops and maintenance costs grow over time before their eventual costly replacement, NbS become more robust as they mature.

### Specific recommendations for national governments:

- Mainstream wetland NbS into environmental and sectoral policies, and manage and recognise wetland ecosystems as highly resilient “natural infrastructures” that contribute to water security, food security and climate change mitigation and adaptation.
- Enhance commitments to international agreements that support biodiversity adaptation to climate change and restoration, such as the EU Nature Directives, the Barcelona Convention and its protocols, the United Nations Framework Convention on Climate Change (UNFCCC), the International Biodiversity Framework and the UN Decade on Ecosystem Restoration.
- Incorporate blue carbon ecosystems into climate mitigation policies and include wetland carbon sinks in Nationally Determined Contributions (NDC) under the Paris Agreement.
- In accordance with their relevant international commitments, develop a coordinated strategy for the large-scale implementation of wetland-related NbS by 2030.

### Specific recommendation for the private sector:

- Invest in NbS to provide new economic opportunities that ensure sustainable access to water and other natural resources.

### Specific recommendation for international organisations:

- Increase regulatory recognition of the exceptional services wetland ecosystems can offer for climate change adaptation and mitigation in the work of the UNFCCC.



Wetland ecosystems must be better integrated and prioritised in existing and upcoming targeted restoration policies.

Considering the scale of wetland degradation in the Mediterranean and the ecological and climatic crises already severely impacting the region, simply conserving remaining wetlands is no longer enough. Increasing climate hazards such as sea-level rise, heatwaves and flooding, mean more ambitious adaptation measures are required. One such measure urgently needed is restoring the ecological functions of wetlands, especially in coastal areas to protect people and local activities.

Restoration refers to the implementation of concrete actions for the recovery of wetlands towards a more natural state. In other words, to improve their ecological status to similar levels observed prior to their significant disturbance and alterations resulting from human activities. As a start, restoration activities should reduce the detrimental human impacts occurring.

Wetland restoration as NbS can be achieved through a number of different scenarios, including: i) constructing new wetlands in dry areas, ii) rewetting, notably by removing barriers on rivers and restoring wetlands that have been fully or partially drained, and iii) improving the quality of existing wetlands that have been degraded through concrete conservation actions such as integrated river basin management.

### Restoring wetlands is essential to:

- re-establish the natural functions of wetlands,
- protect and increase the exceptional biodiversity they host,
- enhance the multiple benefits they offer to Mediterranean people and economies,
- meet the growing regional demand for ecosystem services, in particular freshwater provision, to satisfy the needs of an increasing human population,
- better tackle the climatic and environmental challenges ahead.

Successful restoration measures usually need to be implemented over a long period of time (>20 years) (Dudley et al., 2021), must be closely monitored (the EU Water Framework Directive provides for an assessment of the watersheds every 6 years) and require

long-term visions and policies. Effective restoration must be coupled with an appropriate ecosystem knowledge base, adaptive management schemes and governance arrangements.

### Specific recommendations for local, regional and national authorities:

- Eliminate or reduce sources of wetland degradation as much as possible, such as conversion of wetlands to other land uses, unsustainable water abstraction, or pollution for example.
- Adopt wetland/water/flood risk management strategies at a landscape scale - from inland wetlands and rivers to coastal wetlands - restoring the natural water cycle by introducing Integrated Water Resource Management (IWRM), Integrated River Basin Management (IRBM) and Integrated Coastal Zone Management (ICZM) together with restoration activities.
- Integrate wetlands into Area Based Planning, particularly in urban and coastal areas, ensuring a global land-use approach that includes fully the services provided by wetland ecosystems for climate change adaptation and mitigation and for human well-being.

### Specific recommendation for international organisations:

- Halt harmful subsidies that impact wetlands negatively. For example, the Common Agriculture Policy of the European Union provides financial support for crop development in wetland areas, hence promoting irrigation, drainage and use of pesticides, and the European Maritime, Fisheries and Aquaculture Fund (EMFF), such as the Young Fishers Business Start-up Programme, favours unsustainable fishing practices.



A good knowledge base on Mediterranean wetlands is a prerequisite for effective planning and management of these habitats.

Improving the knowledge base on Mediterranean wetlands is a prerequisite for effective planning and management of these habitats. A good knowledge base is essential to guide the decisions of managers and other stakeholders to design effective management measures and plan appropriate wetland conservation and restoration actions. In this regard,

there has been significant progress in recent months.



The first established Pan-Mediterranean wetland ecosystem knowledge base has been developed collaboratively with a wide range of key actors in the region and is maintained by the European Topic Centre on Spatial Analysis and Synthesis, University of Malaga (ETC-UMA)<sup>1</sup>, in the framework of the Interreg Mediterranean Biodiversity Protection Community (MBPC) until the end of the project. It includes a regional wetland ecosystem map highlighting the spatial extent, distribution and types of wetlands, as well as a complementary assessment of the condition of their biodiversity (Trombetti et al., 2022).

The Pan-Mediterranean wetland knowledge base will serve regional and national inventories by filling major information gaps. However, there currently remains insufficient data available for the southern and eastern Mediterranean. It therefore requires updating and maintenance as more data becomes available in the coming years.

In the short to medium term, this knowledge base is expected to be used as a spatial reference for guiding restoration prioritisation work that addresses wetland ecological sensitivity and the multiple pressures they are subjected to.

### **Specific recommendation for international organisations, regional and national authorities:**

- Financially support activities that will help complete the Pan-Mediterranean wetland knowledge base, in addition to other regional and national level actions to bridge knowledge gaps.

### **Specific recommendation for wetland managers, NGOs, national and local authorities and research institutions:**

- Increase knowledge on the distribution, spatial extent and environmental condition of Mediterranean wetlands, and develop sustainable monitoring mechanisms to ensure their conservation.

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<sup>1</sup> Work done collaboratively with Tour du Valat's Mediterranean Wetland Observatory (MWO) and other experts



Wetland conservation efforts should focus on identified priority hotspots.

Wetland managers and national and local authorities should concentrate their efforts on priority areas for better planning and implementing of wetland conservation and restoration activities at the Mediterranean scale. Different tools have been recently developed to support this.

A map, developed by Tour du Valat, locates degraded wetlands across the European Mediterranean that could be restored and provides an assessment of the restoration effort that would be required (Figure 2).

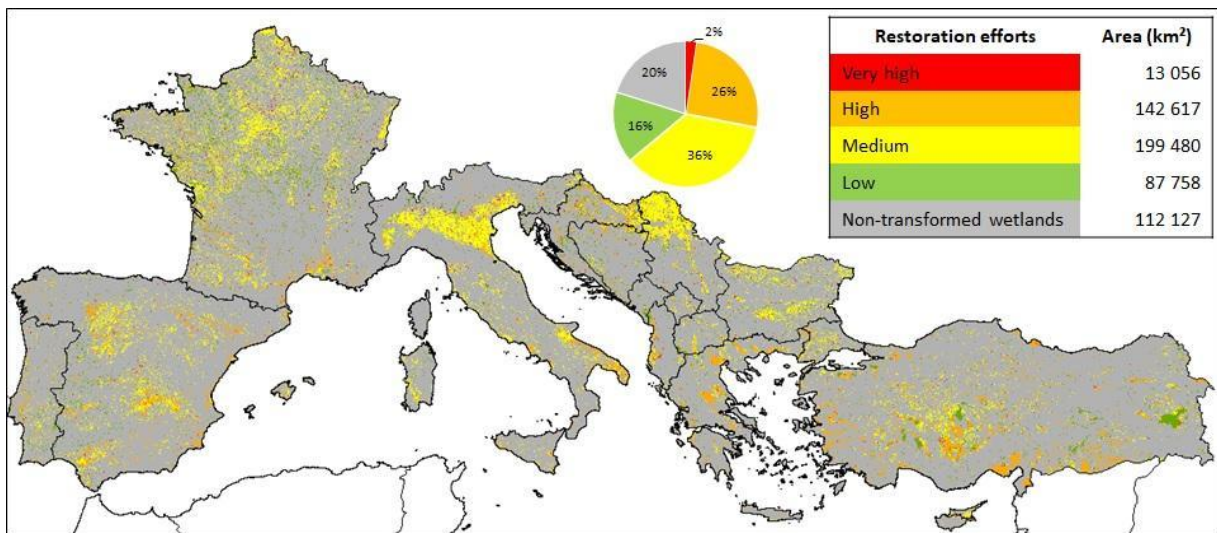


Figure 2 - Wetland restoration potential for the European Mediterranean (Source: MWO, 2022)

Another criterion driving restoration prioritisation is the state of biodiversity. A complementary biodiversity assessment of the Pan-Mediterranean wetland ecosystem knowledge base reveals that 36% of wetland-dependent species are currently threatened with extinction (Zribi *et al.*, 2020), and that the Mediterranean has one of the highest wetland-dependent species extinction threat levels of any part of the world. The most threatened groups being freshwater molluscs (53% globally threatened) and freshwater fish (40%), with 11% of dragonflies and damselflies and 7% of the birds, also threatened (MWO2, 2018).

This additional alarming evidence on the biodiversity loss in these ecologically sensitive ecosystems further supports calls for the prioritisation of wetland restoration. According to available data, the Balkans stand out as an area for prioritising restoration due to the high number of threatened endemic wetland species in their network of small and

medium-sized wetlands; Turkey however, has the highest ratio of threatened endemic species in the region (Trombetti et al., 2022).

A regional survey was also conducted in 2021<sup>2</sup> to obtain a more ambitious and realistic target for the number of hectares that can be restored across the Mediterranean and to provide data to support policy and advocacy actions in favour of Mediterranean wetlands. The survey identified more than 220 wetland sites, covering more than 230,000 ha, across 24 Mediterranean countries, with a potential for restoration.

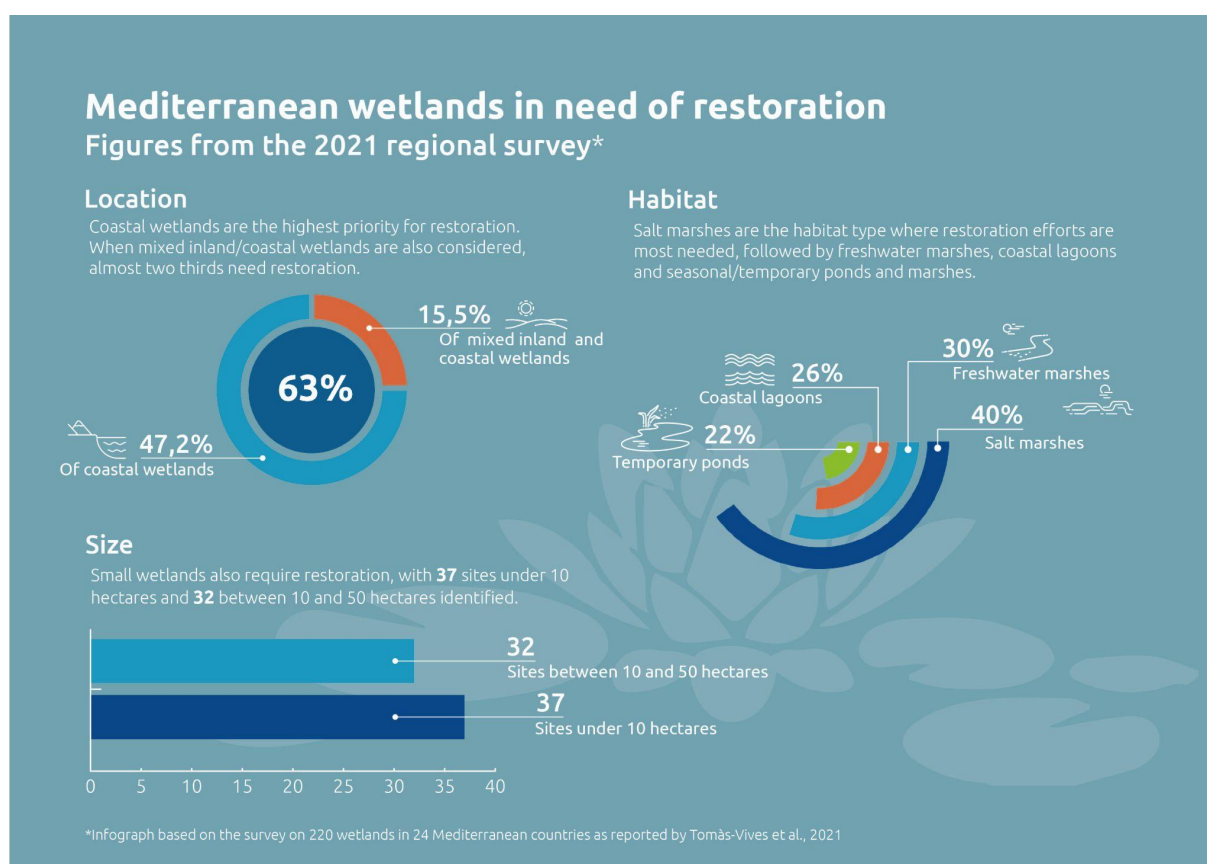


Figure 3 - Mediterranean wetlands in need of restoration: figures from the 2021 regional survey

### Specific recommendation for international organisations:

- Support national commitments to wetland restoration and monitoring by developing international legal instruments and financial schemes to support long-term processes.

### Specific recommendation for wetland managers, NGOs and research organisations:

- Develop operational plans with local, regional and national authorities, local communities and other stakeholders focusing on priority wetland areas for restoration.

<sup>2</sup> [www.wwf.es/nuestro\\_trabajo/agua/humedales/potential\\_wetlands\\_to\\_be\\_restored\\_in\\_mediterranean\\_countries/](http://www.wwf.es/nuestro_trabajo/agua/humedales/potential_wetlands_to_be_restored_in_mediterranean_countries/)



Integrated governance schemes are critical to improve the management of wetland ecosystems.

Mediterranean wetlands need to be better managed. Based on the last estimates, there are 397 wetlands of International Importance (Ramsar sites) in the region covering nearly 7 million ha (UNEP/MAP and Plan Bleu, 2020; MWO2, 2018). Most of these wetlands, although many of them are legally protected, continue to be harmed by human activities. Approximately 44% of sites have developed a management plan, with only 30% actually implementing it (MWO2, 2018).

To achieve improved management, transformative changes in decision-making processes, along with integrated and decentralised governance frameworks which reflect the socio-economic importance of wetlands for local people, are required (IPCC report, 2022). Typically, local communities have good knowledge of the ecosystems on which they depend for their livelihoods, and understand how to conserve them. Therefore, involving all stakeholders, in particular local communities, in decision-making from conception and planning to implementation, helps develop a sense of collective ownership of natural wetland resources and creates incentives for their sustainable use (Osborne et al., 2021). Transformative change towards more sustainable wetland management also means moving towards a hydro-ecological approach that reflects on-the-ground realities of interconnected natural ecosystems with human modified land and water ecosystems<sup>3</sup> (Dudley et al., 2021).

Local and regional authorities and other local stakeholders must introduce integrative and adaptive governance systems that build on transferring available tools and best practices. In that sense, building on the Interreg Med project WETNET (2016-2019), initially developed for water management, the TUNE UP project was initiated in 2019 and aims to improve marine protected area management through an innovative governance model: the Environmental Contract<sup>4</sup>. This approach has since been adapted in several countries for wetland management and is proving to be an effective governance system. One of many successful examples is in Oristano, Sardinia, where a voluntary Coastal Wetlands Contract was signed in February 2021. This contract reflects the shared commitment of local and regional authorities, local communities and the private sector, to collectively improve the protection and integrated management of wetlands in the Gulf of Oristano, which includes

<sup>3</sup> See the 4Returns Framework for Landscape Restoration developed by Commonland: <https://www.commonland.com/wp-content/uploads/2021/06/4>Returns-for-Landscape-Restoration-June-2021-UN-Decade-on-Ecosystem-Restoration.pdf>

<sup>4</sup> [http://www.urbanisticatre.uniroma3.it/dipsu/wp-content/uploads/2021/07/NU303\\_TUNEUP\\_light.pdf](http://www.urbanisticatre.uniroma3.it/dipsu/wp-content/uploads/2021/07/NU303_TUNEUP_light.pdf)



Ramsar and Natura 2000 sites<sup>5,6</sup> while at the same time seeking out new socio-economic development opportunities.

Another initiative such as the WaterLANDS project<sup>7</sup> plans to develop a generic, ideal and transferable governance model for wetland restoration based on wetland sites across Europe where restoration efforts have produced successful results and experiences. This governance model can also be applied to other places.

### Specific recommendations for national governments:

- Implement the Ramsar Strategic Plan 2016-2024.
- Ensure more effective protection of already “on paper” protected wetlands and increase legal protection of Mediterranean wetlands through national legislation and by designating further Ramsar sites, with a focus on important gaps in the Middle East, Northern Africa, Western Europe and the Balkans.
- Put in place economic incentives – such as tax reductions or payments for ecosystem services – to support local stakeholder efforts to sustainably manage, conserve and restore wetlands.

### Specific recommendation for local and regional authorities:

- Promote a decentralised participatory management approach using Environmental Contracts<sup>8</sup>, whereby local communities and stakeholders are involved, a sense of resource ownership and land stewardship is nurtured and socio-economic incentives for wetland conservation are created.

### Specific recommendation for wetland managers:

- Develop and implement adaptive management plans for all Ramsar sites.



Networking and knowledge sharing need to be strengthened to build a greater capacity for improved wetland conservation across the region.

Wetland conservation and restoration initiatives are multiplying throughout the Mediterranean Basin. Good practices are flourishing that could be successfully replicated and adapted elsewhere in the region, but these need to be better shared through existing networks.

<sup>5</sup> <http://www.maristanis.org/>

<sup>6</sup> Also see on the issue “The Governance of Coastal Wetlands in the Mediterranean - a Handbook”, PAP/RAC: <https://iczmplatform.org/storage/documents/Z0tWimBnDIOFbP0LLa4gkzMdkDBD0UIwNhhthjc.pdf>

<sup>7</sup> <https://www.waterlands.eu/>

<sup>8</sup> More information available on the Mediterranean Biodiversity Protection tools catalogue, page 38.

Through the multi-partner MAVA-funded Wetland-Based Solutions project, a hub of technical tools and knowledge for wetland managers and decision makers, produced by the Mediterranean Ramsar Site Managers Network, MeRSiM<sup>9</sup> is underway. Some material has already been provided by the MedWet Academy<sup>10</sup>. The hub is set-up as a share-and-learn network. Wetland managers come together with an interest to advance their conservation and sustainable use agendas and to share their experiences. Through physical workshops and several webinars per year, MeRSiM also reinforces the capacities of managers and National Focal Points to effectively manage their Ramsar sites and increase knowledge.

### Specific recommendations for wetland managers, NGOs and research organisations:

- Use the Mediterranean Wetland Managers Network (MerSim) to share knowledge and best practices from field work and increase research on the benefits of wetlands as NbS.
- Develop better communications among and between scientists, decision-makers, wetland managers and civil society.
- Develop networking and synergies between transnational Mediterranean wetland initiatives.



Wider society needs to be fully aware of, and understand the importance of freshwater ecosystems to their social, economic, cultural and environmental well-being and the consequences of their unsustainable use.

Despite their vital role in supporting Mediterranean countries' livelihoods and economies, the importance of freshwater ecosystems is often largely underestimated by local people and decision makers. Often wetlands are considered "waste" areas that can be drained or pumped as free access water providers. It is therefore essential to raise awareness to change these perceptions among all users and make them realise that water must now be considered as a limited resource in the region and consequently, that sustainable water-use practices need to be compulsory.

<sup>9</sup> <https://medwetmanagers.net>

<sup>10</sup> <https://medwetmanagers.net/medwet-academy/>

### Specific recommendations for regional and local authorities:

- Introduce adaptive management measures for water allocation ensuring human and ecological needs are balanced in changing climatic and environmental conditions.
- Promote a “new ethic” towards the use of water resources, introducing realistic pricing and reducing harmful subsidies to prevent excessive use.
- Promote traditional water management practices, especially for irrigation.
- Promote traditional agricultural systems adapted to local climatic conditions and promote local consumption.
- Raise awareness to change the perception of civil society towards wetlands through campaigns or dialogues with other stakeholders.

### Specific recommendations for the private sector:

- Develop agro-ecological practices to reduce water abstraction and soil degradation, and introduce climate-robust, drought-resistant plant varieties.
- Promote sustainable water use, especially in the agriculture, industry and tourism sectors.
- Remove or reduce sources of pollution, particularly those connected with agriculture, domestic, commercial and industrial activities.

### Specific recommendation for wetland managers, NGOs and education institutions:

- Increase awareness at all levels of society on the value of wetlands and promote their sustainable use and management, with a particular focus on educational programmes for young people.

## Key messages to guide Mediterranean stakeholders in their efforts



### 03. THE BENEFITS AND CHALLENGES OF WETLAND CONSERVATION

The recent report from the UN's Intergovernmental Panel on Climate Change (IPCC) (IPCC report, 2022) is an alarming call for action. In the current scenario, the Mediterranean region will be even more affected by climate change than was previously anticipated with extreme heat waves, floods, droughts and water scarcity both in the near-term (2021-2040) and long-term (2041-2100). Coastal communities and economies will be severely hit, and flood damage is projected to increase at least tenfold by the end of the 21st century. Most coastal wetlands will disappear too, together with the essential services they provide to people and nature.

A fundamental operational and conceptual shift is needed across all economic sectors, with coordinated efforts at all levels to better address the intensifying impacts of climate change. It is critical that wetlands are part of the solution for the Mediterranean. They are vital for Mediterranean society, not only for the rich biodiversity they support, but for the multiple benefits they provide to humanity, especially for climate change mitigation and adaptation. Despite their importance, these exceptional ecosystems are often overlooked in management and policy processes, and their area continues to shrink.

#### WETLANDS, THE FORGOTTEN ECOSYSTEM PROVIDING OUTSTANDING AND CRUCIAL SERVICES

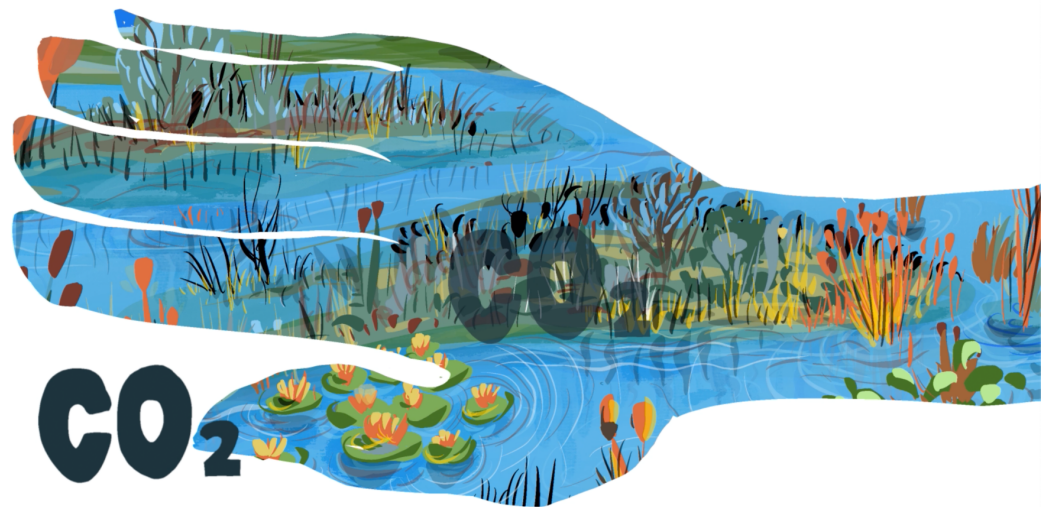
Wetlands – which include ponds, rivers, estuaries, floodplains, wet grasslands, lakes and seagrass beds – are among the world's most productive ecosystems. Their estimated global value exceeds US\$ 51 trillion per year (MWO2, 2018), yet their benefits remain largely overlooked. Fully understanding the value of wetlands is essential for inland and coastal planning, management and restoration activities in the Mediterranean.

**Wetlands ensure water and food security for millions of Mediterranean people.** They purify water from pollutants, provide drinking water for humans and livestock, and supply water for crops, industry and energy production. They regulate flows, storing water during floods and releasing water during droughts. They provide food for human consumption and support the livelihoods of local communities.



Wetlands are champion ecosystems in the fight against climate change across the Mediterranean region, which is warming 20% faster than the global average (MedECC, 2020).

When well managed and in good environmental status, wetlands are among the most efficient carbon sinks in the world as highlighted in the meta-analysis *Carbon pools and sequestration potential of wetland ecosystems in the European Union*, developed by the European Topic Centre on Spatial Analysis and Synthesis (ETC-UMA) (Abdul Malak et al., 2021)



# Wetlands

## Ecosystem types, threats and recommendations

### Riparian, fluvial and swamp forests

Covering in Europe:

- Forested peatlands
- Freshwater, tree-dominated wetlands flooded forests

**Carbon sequestration rate**  
**23 - 176**  
 (gC m<sup>-2</sup> yr<sup>-1</sup>)

**Threats**

- Unsustainable management
- Deforestation
- Nitrogen deposition
- Alteration of groundwater flows
- Hydrological disconnection

**Management options**

- Limit harvesting and exploitation of these "low productivity" forests
- Regulate a strict protection framework for "wet forests" categories
- Restore "forested peatland" through rewetting practices

# Wetlands

## Ecosystem types, threats and recommendations

### Coastal / Marine wetlands and lagoons

Covering:

- Salines, intertidal flats, coastal lagoons, and estuaries
- With presence of seagrass beds

**Carbon sequestration rate**  
**166 - 282**  
 (gC m<sup>-2</sup> yr<sup>-1</sup>)

**Threats**

- Saltmarshes**
  - Modification of the tidal regime
  - Run-off from agricultural, industrial and urban development
  - Sea level rise
- Seagrass**
  - Run-off from agricultural, industrial and urban regions
  - Human activities in estuaries and seas

**Management options**

- Saltmarshes**
  - Protection from erosion
  - Tidal restoration
  - Maintenance of high salinity levels
- Seagrass**
  - Habitat restoration
  - Sustainable coastal management

**Carbon sequestration rate**  
**43 - 52**  
 (gC m<sup>-2</sup> yr<sup>-1</sup>)



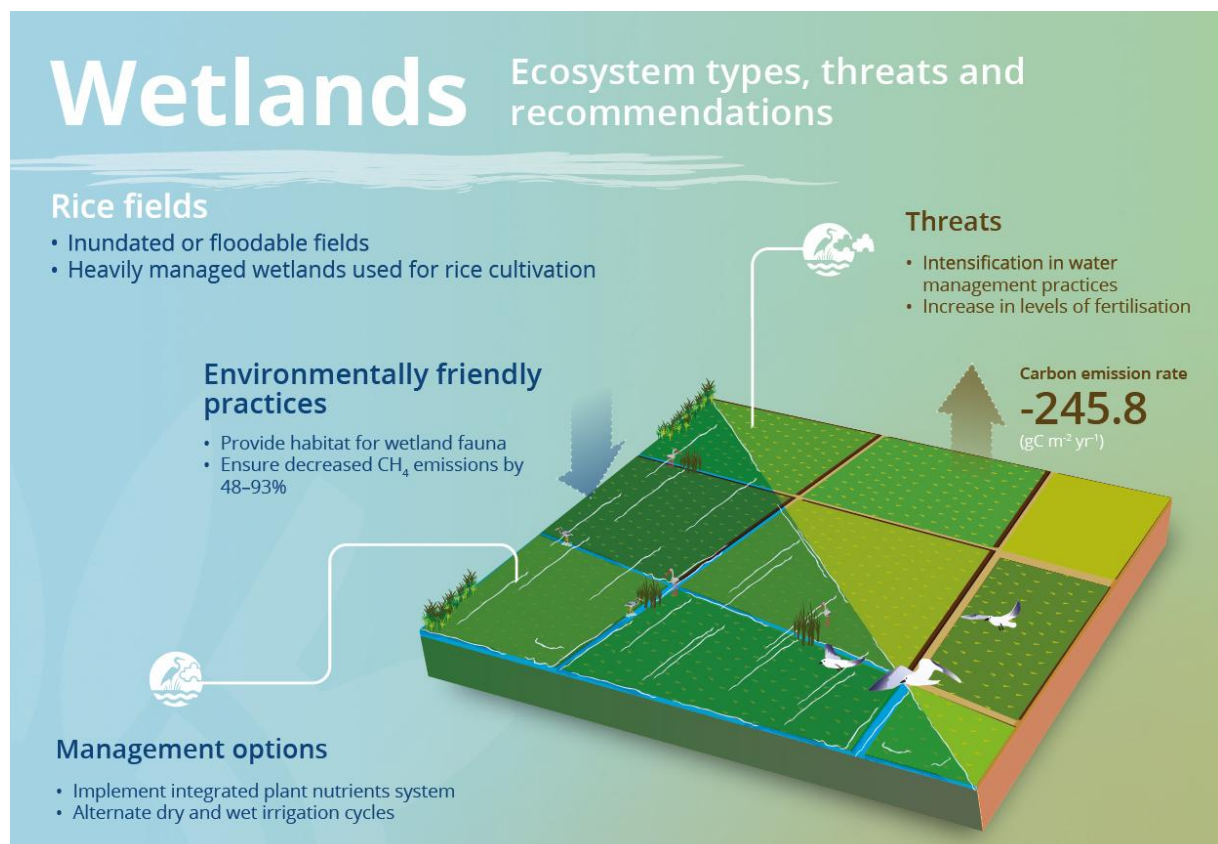
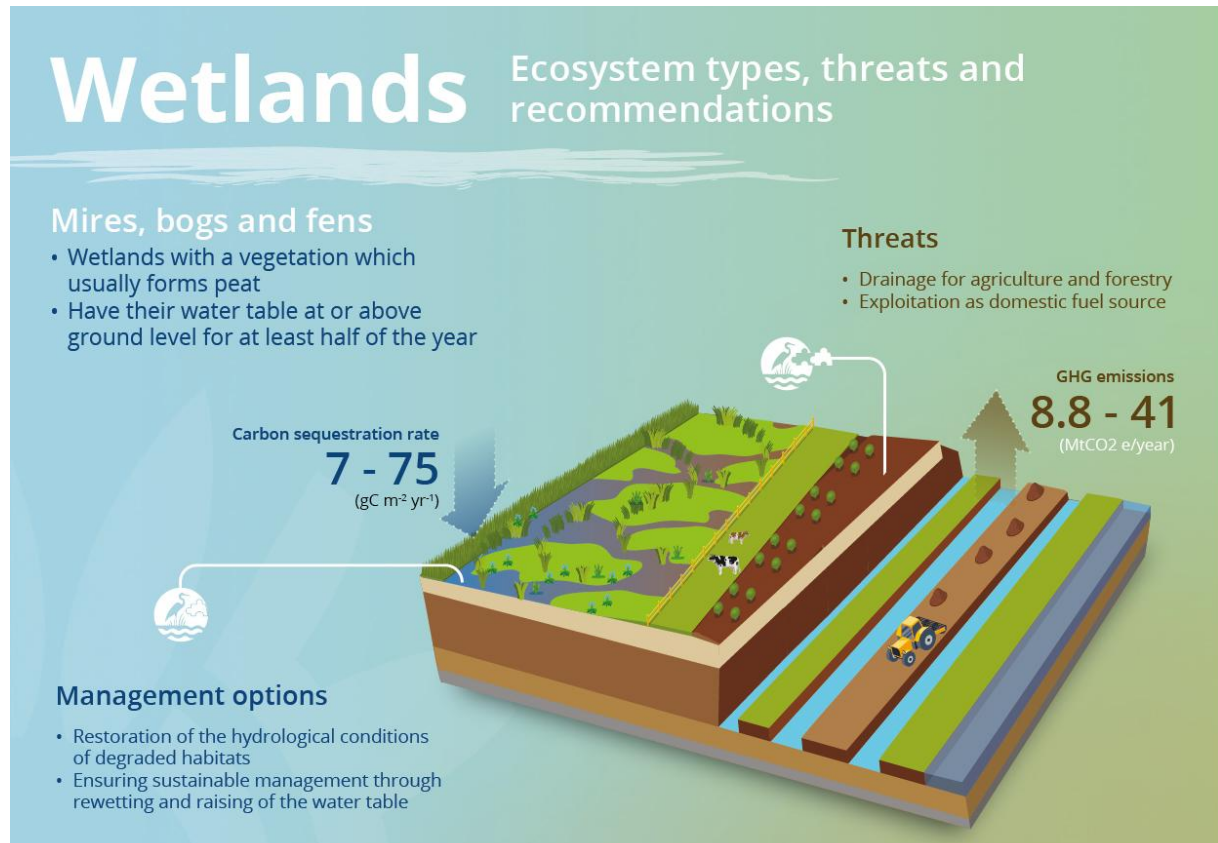


Figure 4 - Estimated carbon sequestration rates, threats and recommendations for selected wetlands ecosystem types (Abdul Malak et al., 2021)

Coastal wetlands, particularly seagrass meadows and salt marshes, have long-term carbon sequestration rates up to 55 times higher than tropical rainforests (McLeod *et al.*, 2011). On the flip side, when degraded, wetlands can release large amounts of CO<sub>2</sub> back into the atmosphere, contributing to global warming (Abdul Malak *et al.*, 2021).

Wetland habitats also play a critical role in buffering climate change impacts such as floods, coastal storm-surges, sea-level rise and salt intrusion. Among their varied habitat types, coastal wetlands are crucial in the land-sea interactions as recognised in the Protocol of the Barcelona Convention on Integrated Coastal Zone Management.

**Wetland habitats are vital in the Mediterranean, a biodiversity hotspot with a high degree of endemism.** While covering only 2%-3% of the surface area of the basin, wetlands provide habitats for 30% of its vertebrate population. Countless plant and animal species, including migratory birds and migratory fish populations, depend on Mediterranean wetlands for their survival (MWO2, 2018; Zribi *et al.*, 2020).

Wetlands also offer recreational opportunities and attract tourists contributing to local economies. The Mediterranean Basin is one of the most popular tourist areas in the world and its wetlands of outstanding beauty are popular destinations for hiking, boating, hunting, fishing, trapping or birdwatching.

## THE STATUS OF MEDITERRANEAN WETLANDS AND THE THREATS AFFECTING THEM

There are around 16 million ha of wetlands remaining in the region (Trombetti *et al.*, 2022), which represents between 1.7% and 2.4% of the total area of the 27 MedWet countries. Over the past century, two-thirds of the wetland areas in the Mediterranean have been drained, with 48% being lost between 1970 and 2013, which is more than anywhere else in the world (MWO2, 2018). Wetland-dependent species are also vanishing along with their habitats. Since 1993, 52% of coastal and marine vertebrate populations have been lost, while 36% of wetland-dependent species are threatened with extinction; Mediterranean wetlands are in fact considered among the world's most vulnerable ecosystems (MWO2, 2018).



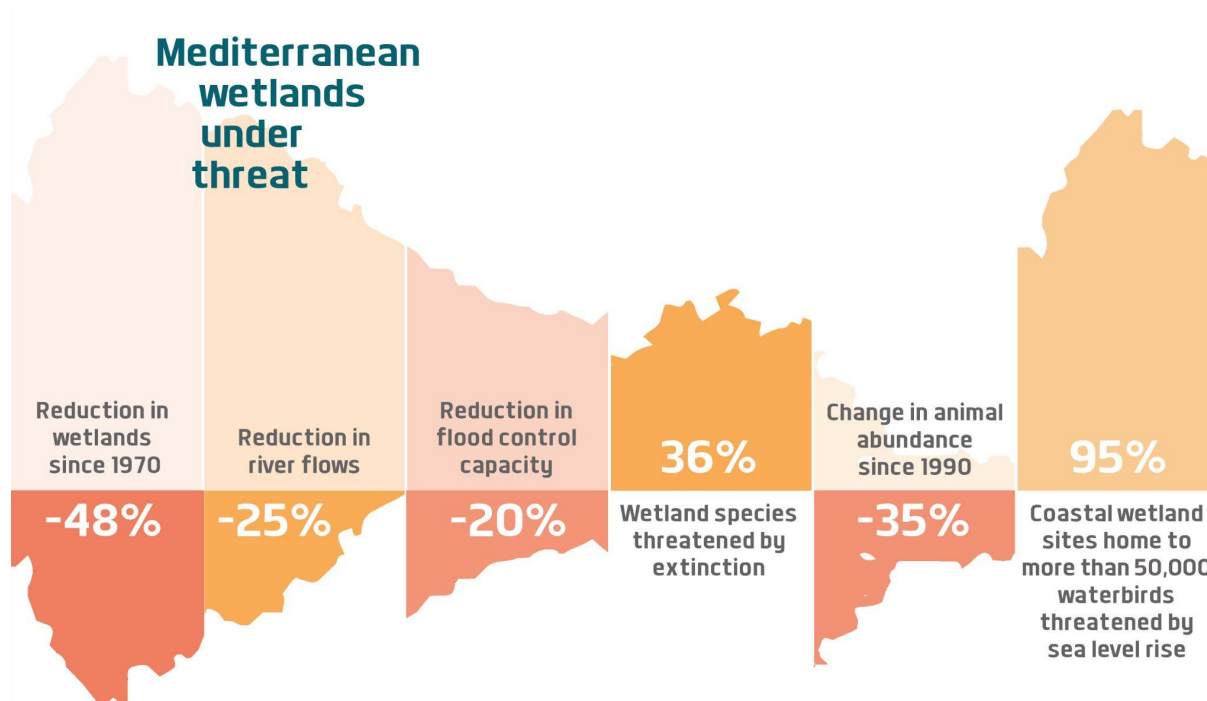


Figure 5- Current state of Mediterranean wetlands (this infographic was produced within the Wetland-based Solutions project - [www.wetlandbasedsolutions.org](http://www.wetlandbasedsolutions.org)). Source: MWO2, 2018

Recent assessments in the EU Mediterranean region reveal that even coastal wetlands under legal protection (Ramsar, Habitat Directive, Natura 2000, etc.) are under threat. The assessments show that 69% have an unfavourable conservation status and only 14% show signs of effective conservation (MAES, 2020).

**Understanding the drivers of wetland degradation in the Mediterranean is crucial for developing tailored responses.**

The main cause of wetland loss and degradation is water abstraction (UNEP/MAP and Plan Bleu, 2020; MWO2, 2018). According to projections, water scarcity will reach unprecedented levels in the coming decades with 250 million people living under freshwater-stressed conditions by 2040 (MedECC, 2020). This is partly due to climate change, but also due to excessive water demand to satisfy increasing human and agricultural needs.

Water demand in the region as a whole has doubled between 1950 and 2000, and by 2025 it is forecast to rise by a further 25% in the southern and eastern Mediterranean.

Irrigation accounts for 72% of the water use, 16% for industry and 10% for drinking (Mandi, 2014). Intensive agriculture affects natural wetlands by excessive water abstraction for irrigated crops, which now cover 80% of the land exploited in the Mediterranean, and pollution from pesticides and chemical fertilisers (UNEP/MAP and Plan Bleu, 2020). Pressure on water resources escalates during the summer when demand from agriculture and tourism is at its peak. Most of this water (80%) is abstracted from rivers, lakes and dams. As a result, between 1960 and 2000 natural flows decreased by 20-60%, and even up to 80% in some areas (Zribi et al., 2020). Dams constructed in recent years to compensate for water shortages have further reduced the natural flooding of wetlands downstream, and have caused an increase in pollution.

Changes in land uses are another major cause of wetland degradation (UNEP/MAP and Plan Bleu, 2020, MWO2, 2018, Zribi et al, 2020). Natural wetlands have been transformed into human-made wetlands (reservoirs, salt pans etc.), croplands, built-up areas and sea-water facilities (47%, 46%, 5% and 2% respectively, of the total converted area) (MWO2, 2018; IPBES, 2019).

The growing population and its concentration in coastal areas is a further indirect driver of wetland degradation and loss. 500 million people now live in Mediterranean coastal areas, an increase of 42% since 1990, and this number is expected to increase by an additional 180 million by 2050 (MWO2, 2018). In 2019, the percentage of built-up areas in the coastal strip has reached an astounding level, and most of the major cities, many transport routes (roads, ports, airports), as well as industrial and energy infrastructure are concentrated here, causing major environmental degradation, including coastal wetlands (UNEP/MAP and Plan Bleu, 2020). In addition, 360 million tourists visit the region annually, putting further pressure on its water resources and coastline (Galewski et al., 2021).

Finally, the severe climate change effects in the region are further increasing water scarcity. Worryingly, most Mediterranean coastal wetlands are projected to disappear over the next century due to sea-level rise, which in turn would lead to dramatic socio-economic and environmental consequences (IPCC report, 2022).

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<https://medwet.org>

<https://medwetmanagers.net/>

[https://planbleu.org/wp-content/uploads/2019/11/policy\\_brief\\_nbs\\_en\\_final\\_light.pdf](https://planbleu.org/wp-content/uploads/2019/11/policy_brief_nbs_en_final_light.pdf)

<https://wetlandbasedsolutions.org>

<https://www.etc.uma.es/marking-wetlands-and-water/>

[https://www.youtube.com/channel/UCIGHAtle\\_oq79xPkTNHJbcA](https://www.youtube.com/channel/UCIGHAtle_oq79xPkTNHJbcA)

<https://www.youtube.com/watch?v=pJObFzb9dCg&t=19s>

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