

Evidence and Solutions for improving **SPONGE** Functioning at Land**SCAPE** Scale in European Catchments for increased Resilience of Communities against Hydrometeorological Extreme Events

# Traditional stone check dams in ephemeral streams: a case study in Paros island

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Period 📕 Annual 📕 Jan-Apr 📕 May-Aug 📒 Sep-Dec



# Water challenges in Paros

High water demand & consumption

Drought

Urbanization

Floods









# Our sponge measure: traditional stone check dams in ephemeral streams







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WWF

# WWF

# Similar projects in Greek islands

Location	Goal	Duration	No structures
Naxos island, Apeiranthos	Erosion control Aquifer recharge	1992-1994	66
Kythira island, Karavas stream	Stream restoration Creation of shallow ponds for irrigation	2020	26
Paros island, Kavouropotamos stream	Aquifer recharge Biodiversity enhancement	2022	34
Ios island, Mavroudi stream	Revival of traditional practices Flood risk reduction Aquifer recharge	2024	50
Sifnos island, Taxiarchis stream	Flood risk reduction Aquifer recharge Biodiversity enhancement	2025	120
Evia island, Lilas river tributary	Flood risk reduction Erosion control Biodiversity enhancement	2026	>50



Launch of post-construction biodiversity monitoring

# **Timeline in Paros**









## **Construction info**

- No connecting material (concrete etc)
- Low cost (~250-500 euros/each)
- Ephemeral streams have no continuous flow → no impact on biodiversity connectivity
- Accessibility
- Availability in stones
- Focus on impermeable/semi-permeable geology
- Keep in mind other points of interest nearby (wells, archaeological sites, agricultural lands etc)







# **Monitoring plan**







## **Preliminary results**







#### **Biodiversity**

- Detection of crabs after several years
- Enhanced NDVI (vegetation metric) from 0.40 in 2019 to 0.43 in 2023, although a 57% decrease in precipitation at the same time

### Surface water and groundwater

• Observed increase in surface water stored and retained by the check dams

#### **Resistance to floods**

• Check dams remained intact after a severe flood event in March 2025











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