

Some Basic Statistics

Malta has an area of 316sqkm, a very small land area,

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just over 410.000 population

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Over 1000 inhabitants/sqkm, the highest population density in the EU,

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Over 1.5 million tourists a year in (2012)

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A very high demand on the water infrastructure!!!

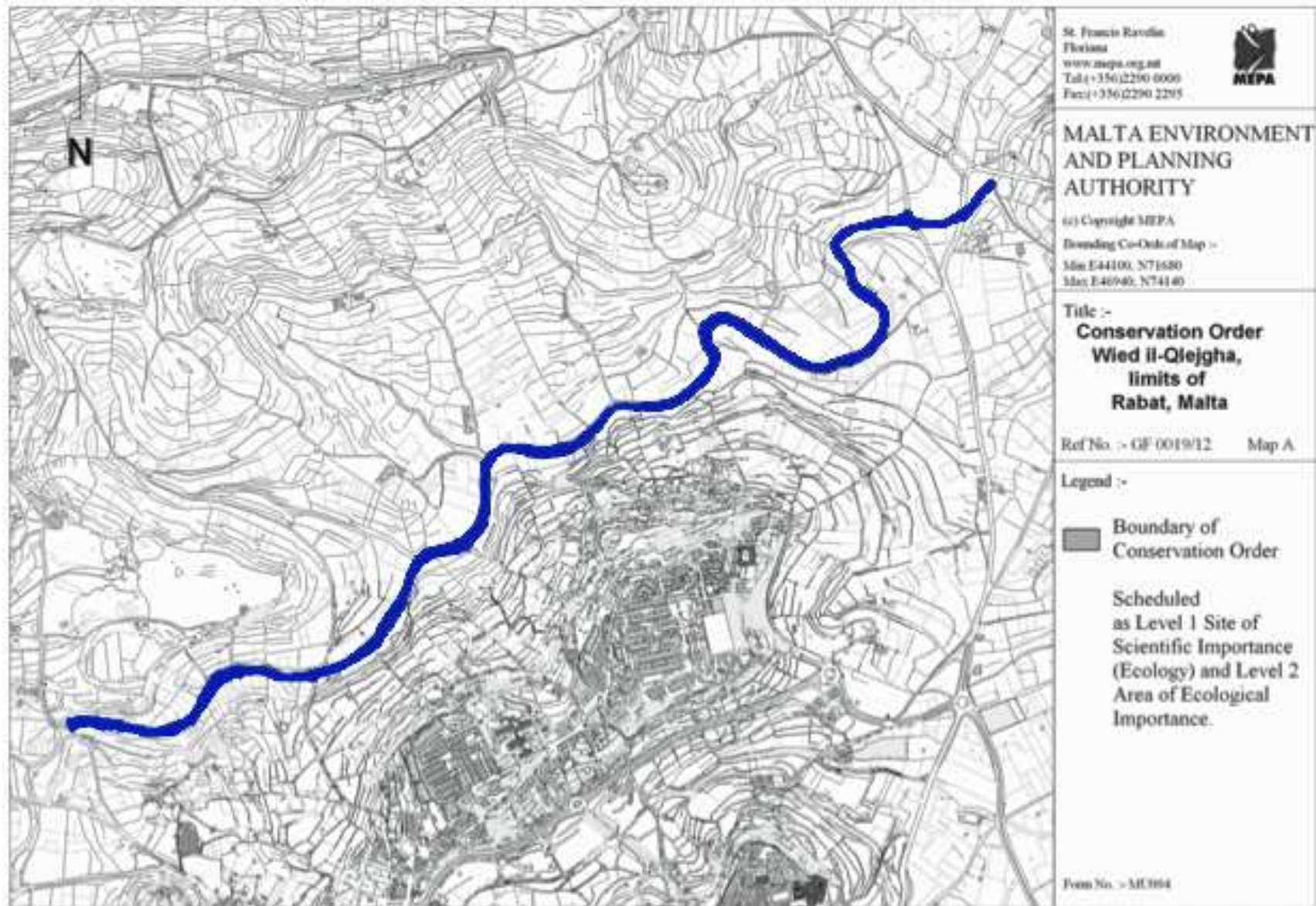
Malta:

- Around 550mm of rainfall a year, concentrated between November to February.
- Only 40m³ (cubic metres) of natural freshwater per capita
- FAO places Malta 170th from 180 countries ranked on availability of **natural water** resources .

**60% of Malta's water needs comes from
3 Reverse-Osmosis plants located in strategic
locations around the island.**

CHADWICK LAKES

Basic information on the current situation and problems



Approx. 3 km of Water-Course

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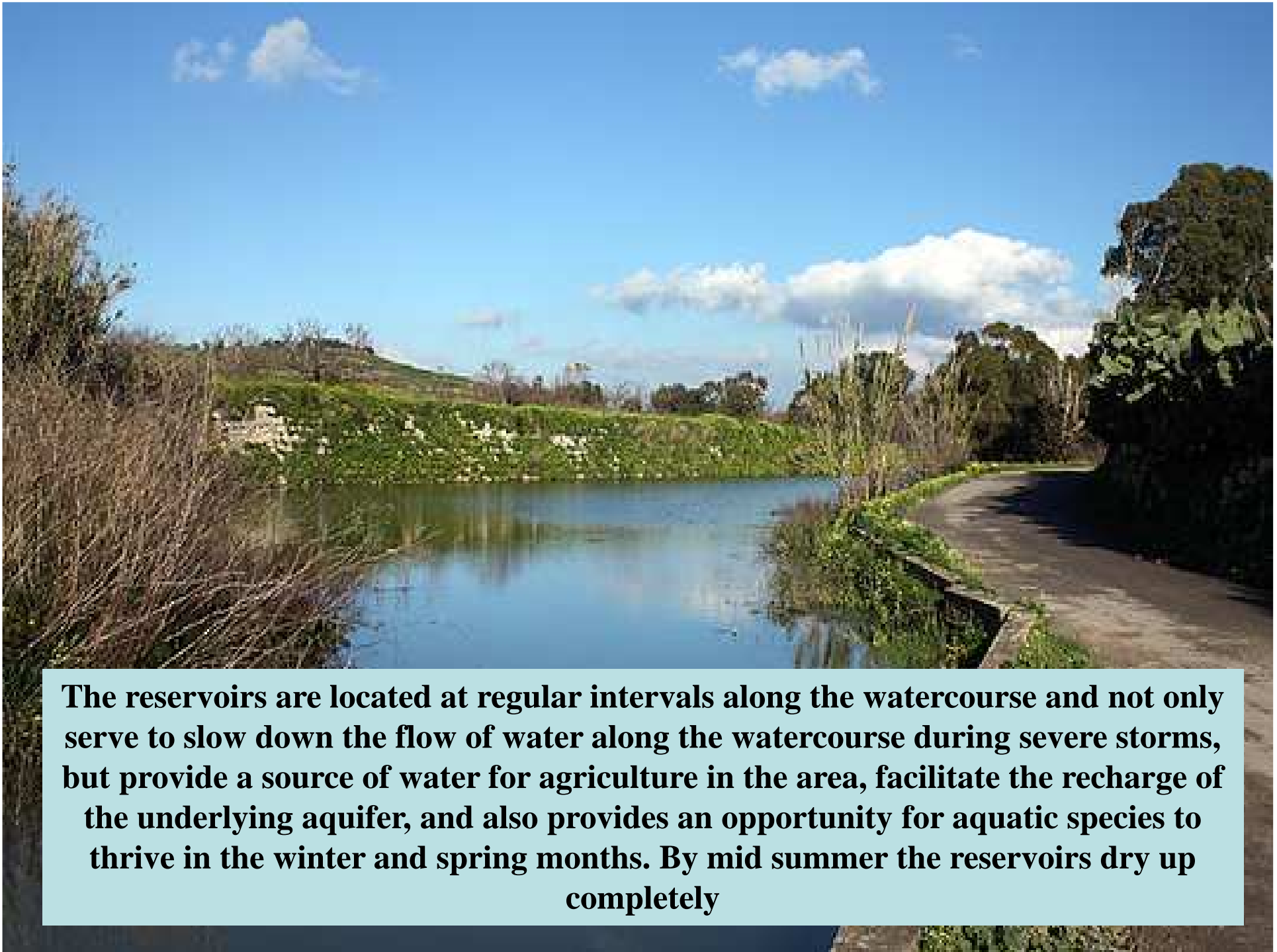
Antoine, I would include a map of Malta showing the extent of the watercourse in a national context.
Sustech; 2013.02.25.

The Chadwick Lakes watercourse runs from the northwest of Malta until it drains into another smaller valley which in turn drains into the sea at Salina Bay.



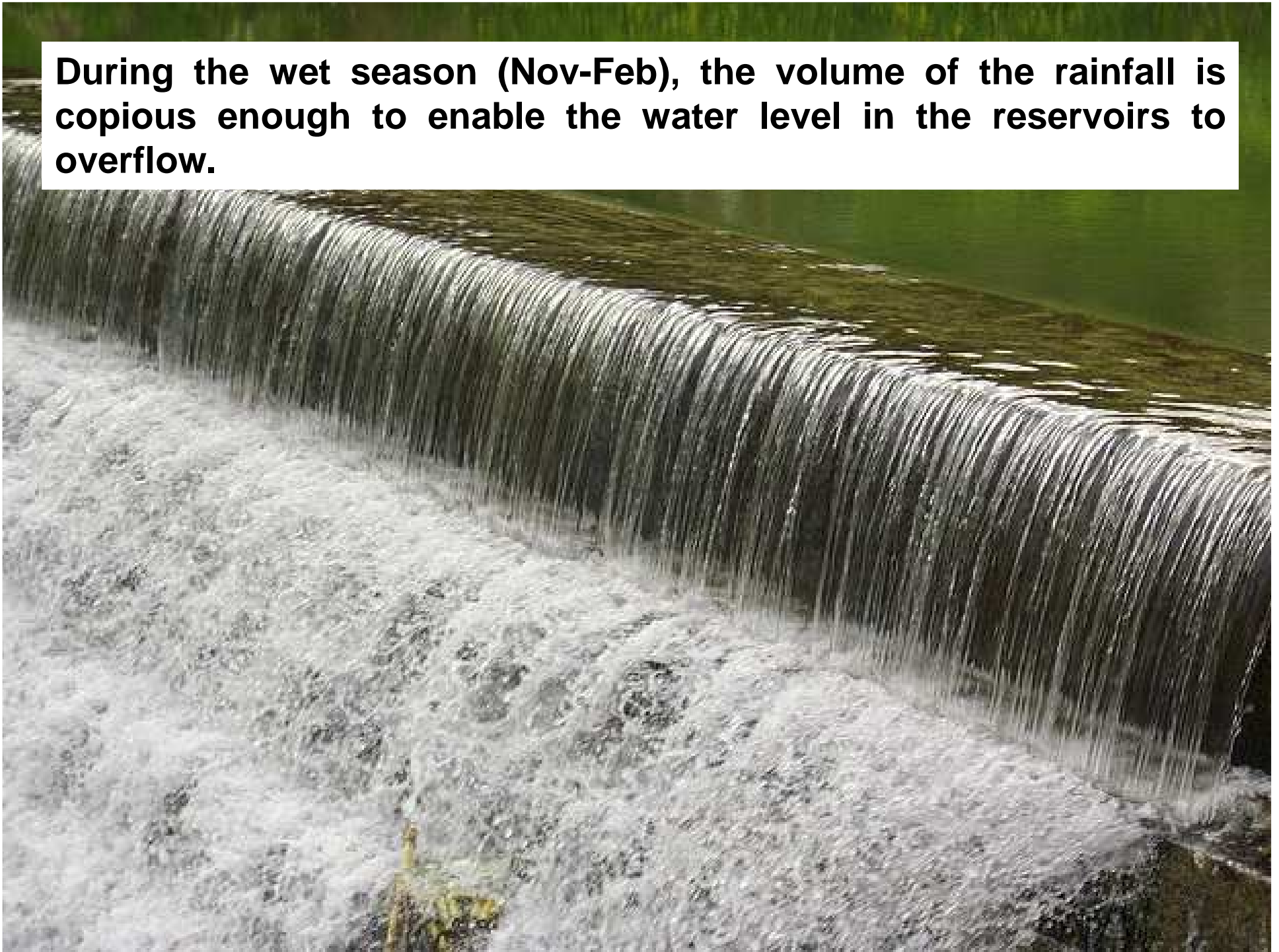
The area features a number of reservoirs built in the 19th century by the British engineer Sir. Osbert Chadwick to trap rainwater for use by farmers in the terraced fields around the valley.

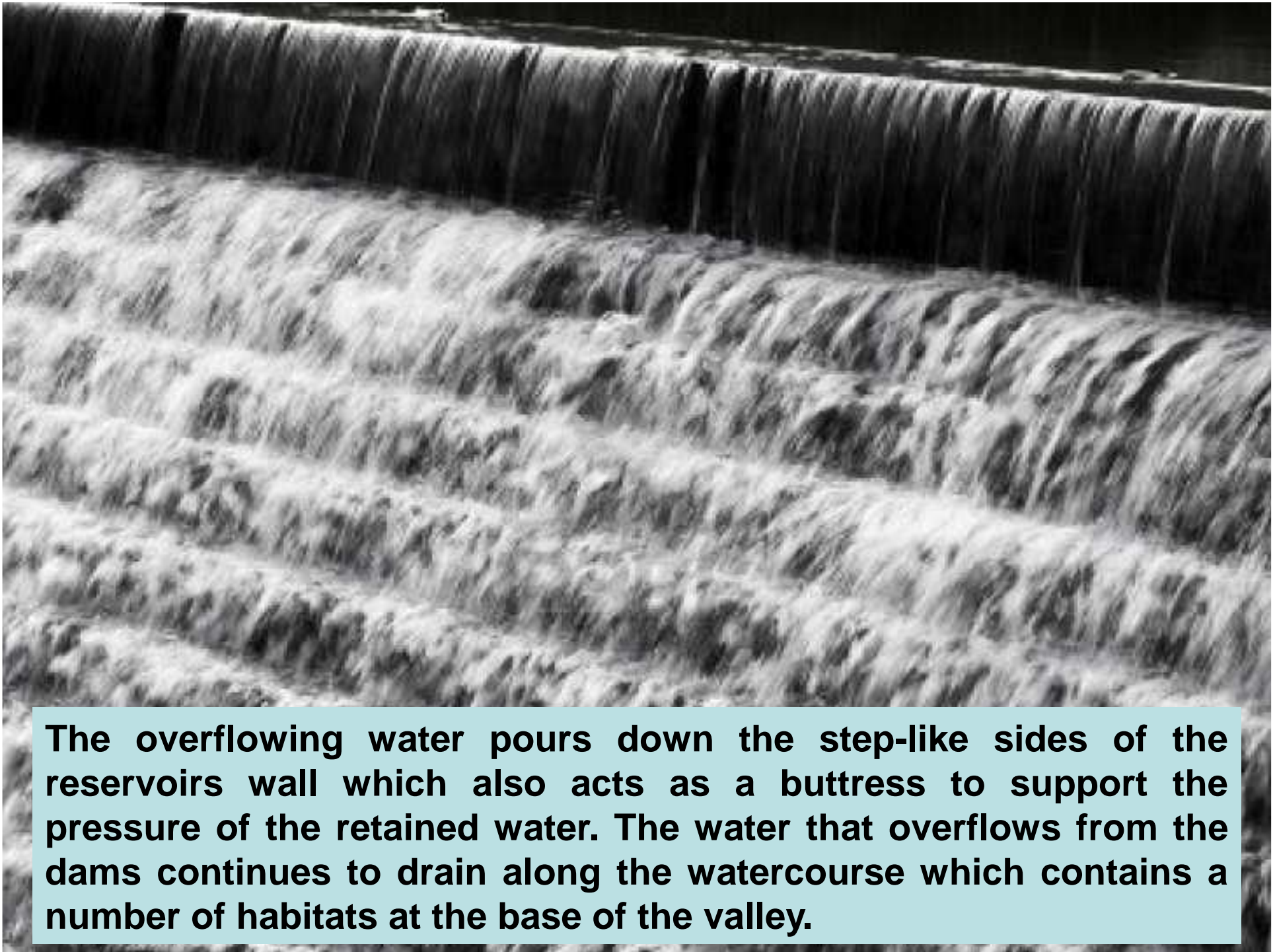




The reservoirs are located at regular intervals along the watercourse and not only serve to slow down the flow of water along the watercourse during severe storms, but provide a source of water for agriculture in the area, facilitate the recharge of the underlying aquifer, and also provides an opportunity for aquatic species to thrive in the winter and spring months. By mid summer the reservoirs dry up completely

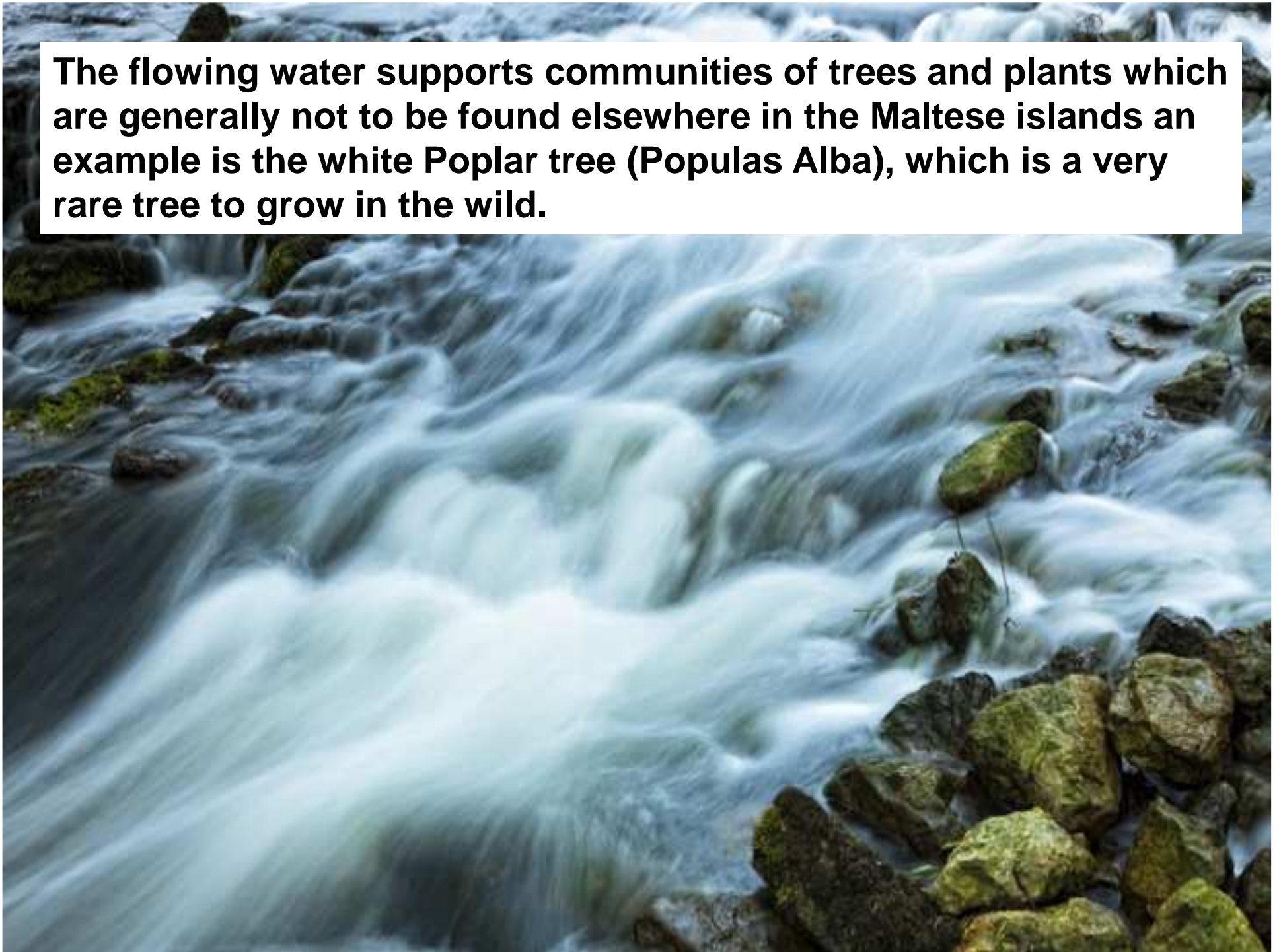
During the wet season (Nov-Feb), the volume of the rainfall is copious enough to enable the water level in the reservoirs to overflow.



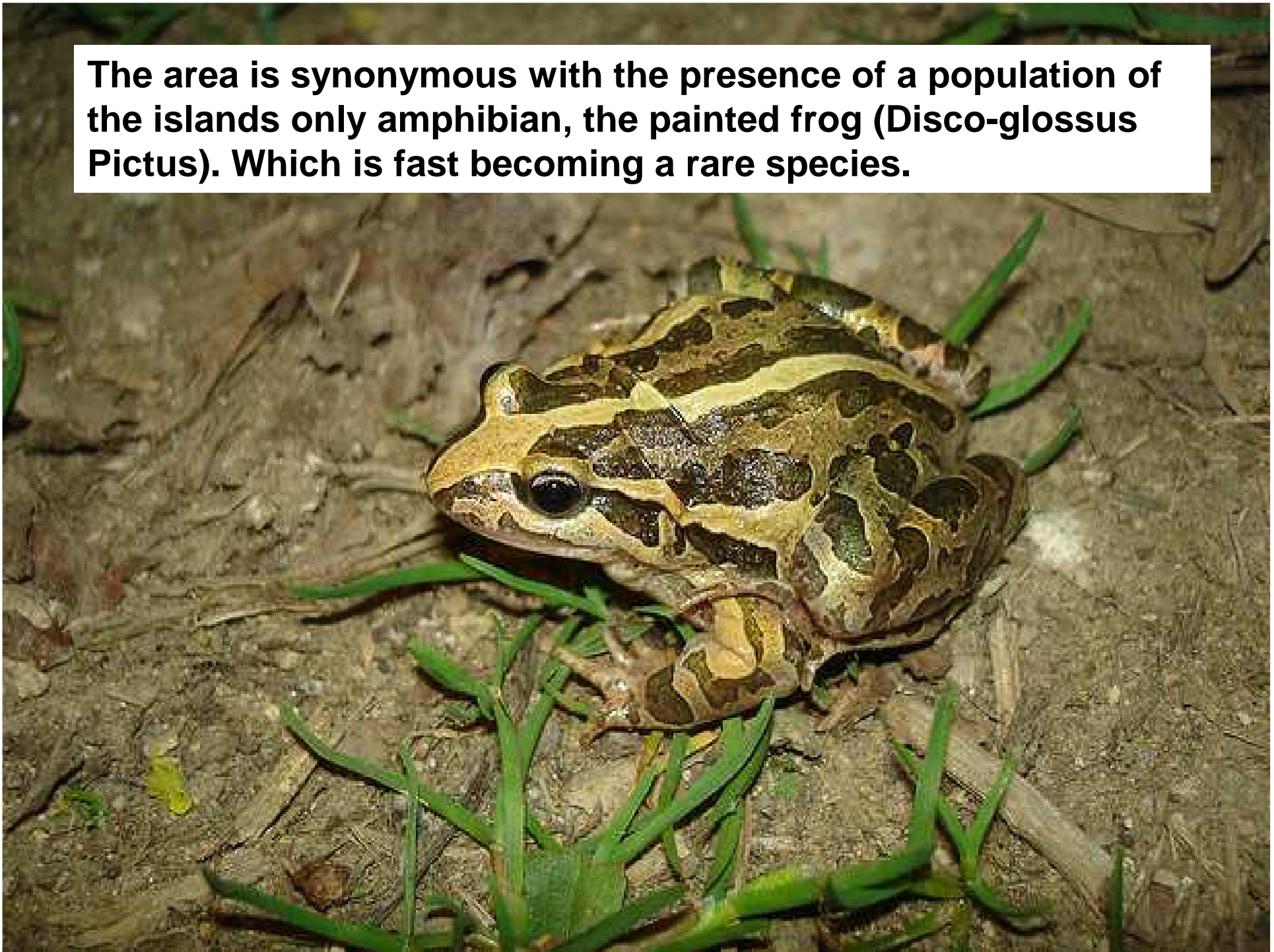


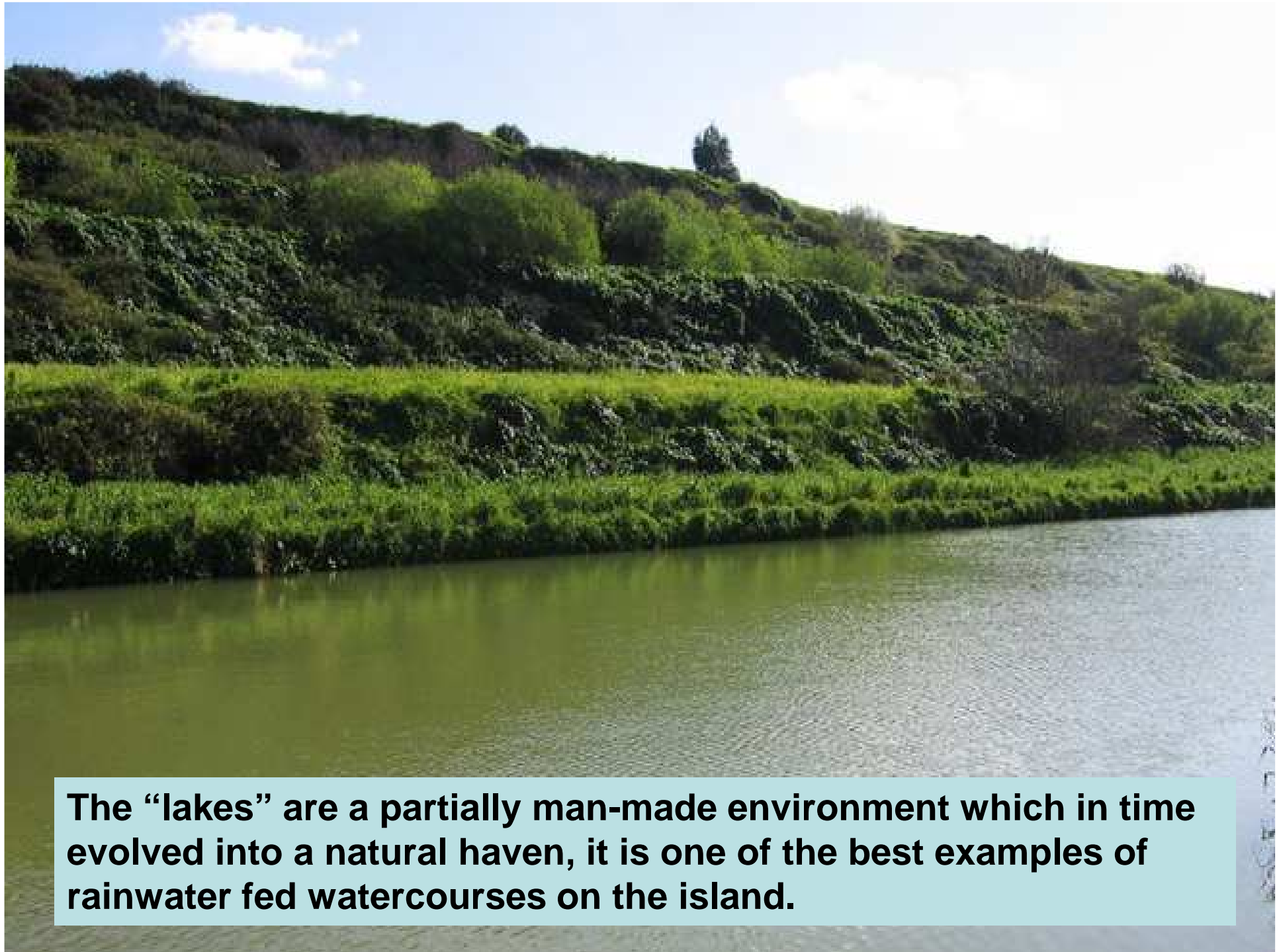
The overflowing water pours down the step-like sides of the reservoirs wall which also acts as a buttress to support the pressure of the retained water. The water that overflows from the dams continues to drain along the watercourse which contains a number of habitats at the base of the valley.

The flowing water supports communities of trees and plants which are generally not to be found elsewhere in the Maltese islands an example is the white Poplar tree (*Populus Alba*), which is a very rare tree to grow in the wild.



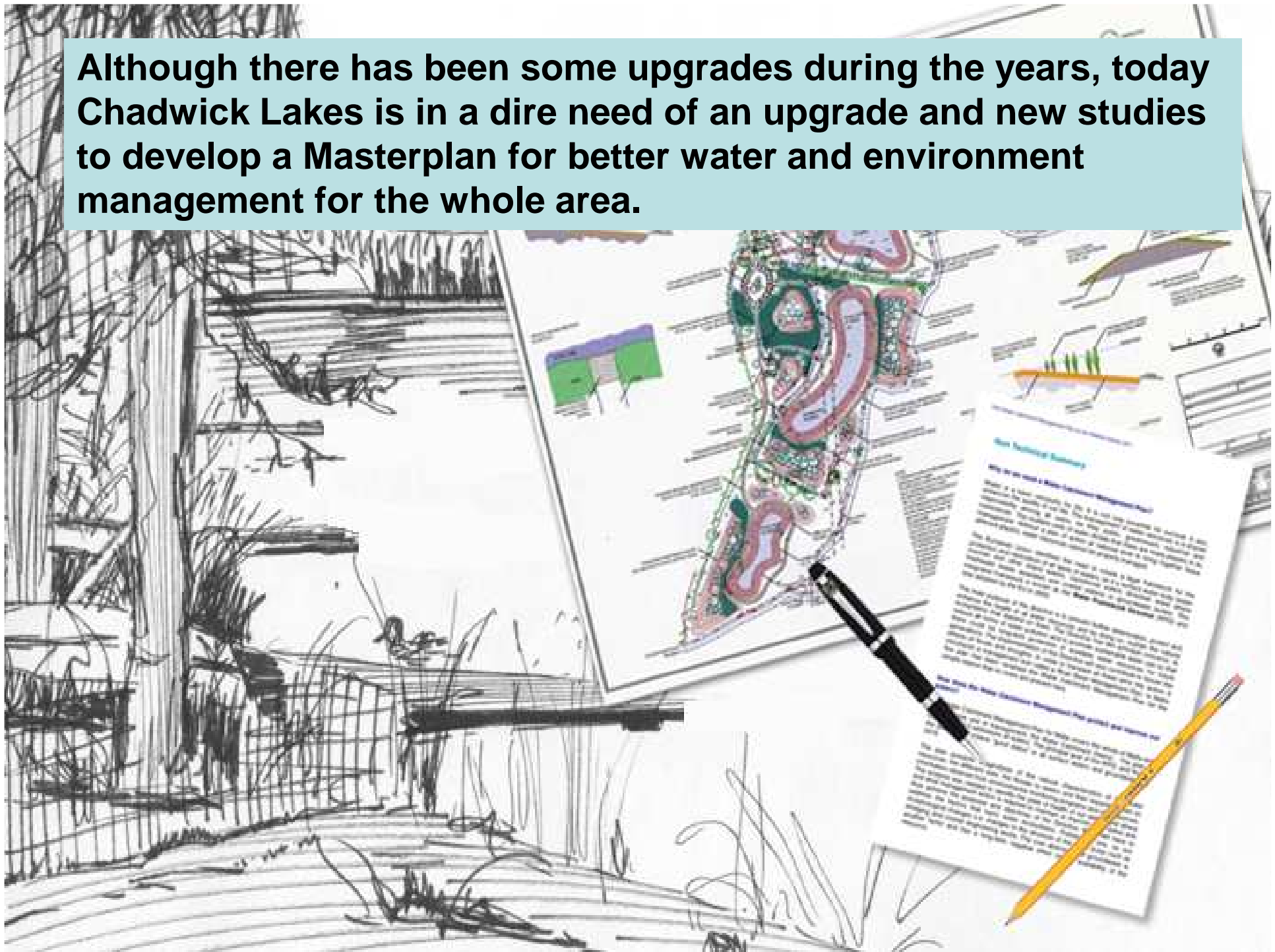
The area is synonymous with the presence of a population of the islands only amphibian, the painted frog (*Disco-glossus Pictus*). Which is fast becoming a rare species.





The “lakes” are a partially man-made environment which in time evolved into a natural haven, it is one of the best examples of rainwater fed watercourses on the island.

Although there has been some upgrades during the years, today Chadwick Lakes is in a dire need of an upgrade and new studies to develop a Masterplan for better water and environment management for the whole area.



CURRENT SITUATION AND PROBLEMS

1. Algae/Nitrates

A viscous green soup of algae, which is stifling freshwater life in the area has often been observed. This is the result of uncontrolled use of fertilizers in the surrounding fields, which is in turn fuelling the algal growth. One can only imagine the voluminous quantities of nitrates creeping from these fields and seeping into our aquifers after heavy rainfall. It is being proposed in future policies that farmers use man-made manure as fertilizers.

The Chadwick Lakes overlie the single most important aquifer in the Maltese Islands, the Mean Sea Level Aquifer of Malta. For a number of years now, the nitrate concentration of groundwater pumped from this aquifer, used for the public potable water supply, has exceeded the safe threshold and the concentration is increasing.



2. Drainage Pollution after Heavy Rains

The drainage problem began with the heavy urbanization of the nearby village of Mtarfa. After heavy rains, drainage seeps through the reservoir system and pollutes sections of the watercourse with very bad consequence to the flora and fauna of the area.

3. Deterioration of Field Retaining Walls

Some of the field retaining walls have deteriorated and crumbling and are in need of maintenance, unless action is taken more soil loss/erosion will occur.

4. Box Gabions Technology

In 1996, field retaining walls were strengthened with box gabions, which look like metal mesh cages. These were built along some of the valley's periphery to avoid soil erosion and allow water through without collapsing. Flora and fauna were also allowed to flourish as they could live between stones. This project was unfortunately stopped in 1998 due to change of environmental political priorities.



5. Cleaning and de-silting of the lakes

Silting is a problem which can be tackled with frequent maintenance and ecologically-sensitive cleaning of the reservoirs.

6. Deterioration of the Reservoir Structures

The reservoirs are in a need of structural works to consolidate the foundations as considerable amount of water is being lost due to cracks and damage induced to lack of proper maintenance.

7. Specimens of local flora

Some specimens of the local flora have been lost by time and neglect. A need to re-introduce them is of importance to keep a healthy balance to the local environment.

8. Measures to make better use of all the rainwater

A rather high percentage of the rainwater that falls and flows in the area is lost into the sea, A holistic water management plan is needed to make the best use of the rainwater that flows in the area.

9. Lack of awareness of policies and regulations

A need to make people more aware with policies and regulations of the area. The national environmental agency, MEPA, is yet to develop codes of practice for the rehabilitation and upkeep of valleys.

10. A strict law enforcement to protect this important area

Another source of disillusionment is the sight of parents, who should know much better, teaching their children the dubious 'skill' of poaching frogs, only to see the same hapless creatures slowly dying in a bottle of murky water.

Latest Development

Legislation

Legislation plays an important part in the protection of endangered species and the use of water. In an effort to protect the remaining habitats and the endangered species within this locality, The Malta Environment and Planning authority (MEPA) listed Chadwick lakes Level 1 Site of Scientific Protection. This means that this valley and its natural habitats were given the highest protection possible.

Thank you for your kind attention.

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Note: However appropriate Code of Practice for the rehabilitation and upkeep of valleys (including Chadwick Lakes) are not yet available.
Sustech; 2013.02.25.