

Monitoring and reporting on the health of wetlands in the Eastern Mediterranean



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Febr. 17, 2021

WATER FRAMEWORK DIRECTIVE 2000/60/EC

NATURAL LAKES: temporary, shallow, brackish – saline – hypersaline

Monitoring programs in 10 Lakes, with 28 monitoring stations:

- 13 sampling stations
- 15 more stations for measurements of *in situ* physicochemical & hydrological parameters



28 sampling & monitoring stations in lakes



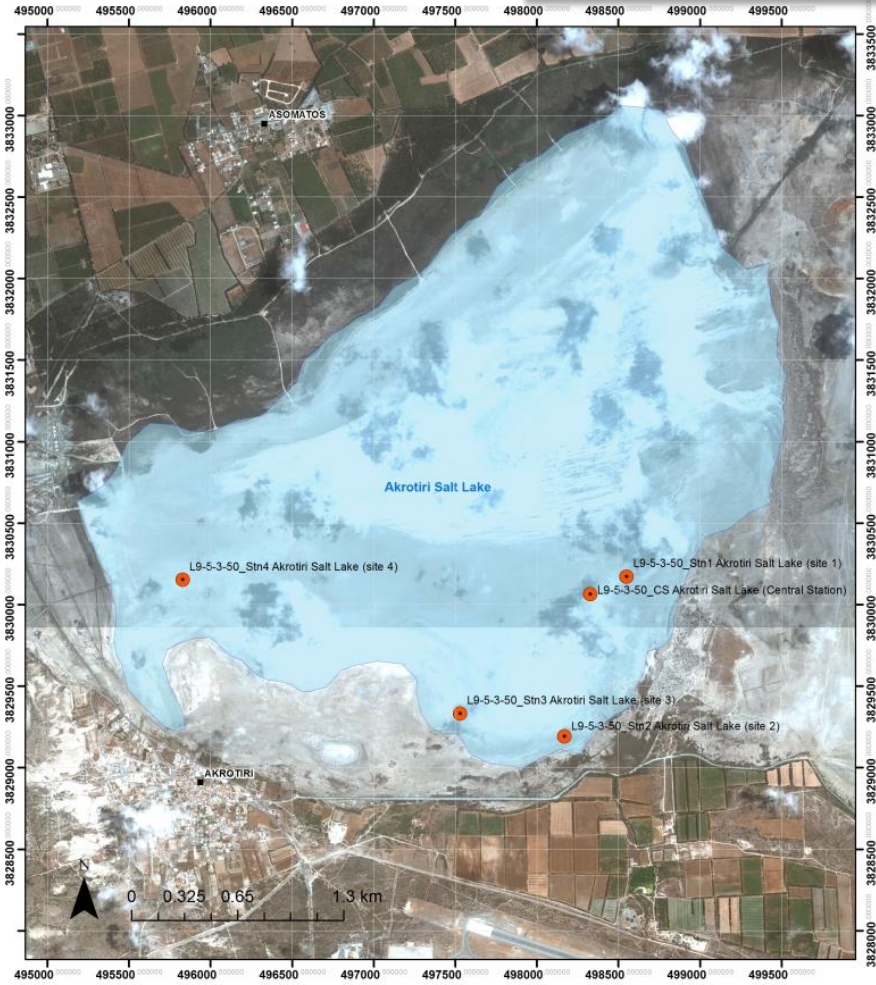
Larnaka lake cluster stations (northern part)



Larnaka lake cluster stations (southern part)



28 sampling & monitoring stations in lakes



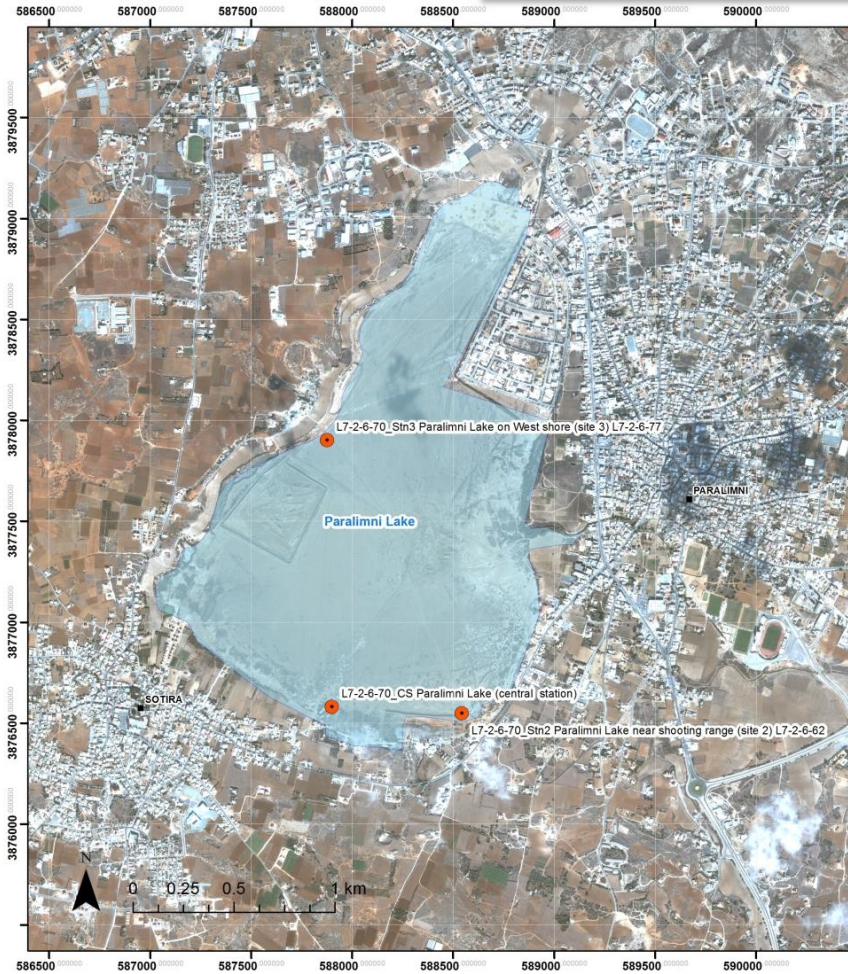
Akrotiri lake stations



Phasouri area stations



28 sampling & monitoring stations in lakes



Paralimni lake stations



Oroklini lake stations



TYPES OF LAKES ACCORDING TO WFD 2000/60/EC

type	lake	salinity	hydrological regime	morphology	altitude	area
LB1	<ol style="list-style-type: none"> Larnaka's main Soros Orfani 	hyper-saline	without drainage	coastal, shallow, temporary	low	semidry-dry
LB2	<ol style="list-style-type: none"> Akrotiri Aerodromiou no.2 	saline to hyper-saline	without drainage	coastal, shallow, temporary	low	semidry-dry
LB3	Paralimni	brackish	with artificial drainage	shallow, temporary	low	semidry-dry
LB4	Oroklini (artificial lake, originally a swamp)	brackish-saline	with artificial drainage	coastal, small, shallow, marshy/swampy, temporary	low	semidry-dry

A. FIRST EVALUATION OF WATER QUALITY

According to programs which have **established preliminary reference conditions** for the temporary salt lakes of Cyprus:

- 4 different types of lakes (salinity, hydrological regime, morphology)
- 2 of the lakes are characterized as heavily modified (Paralimni, Oroklini)
- Phytoplankton and zooplankton considered useful for assessment and are examined in the monitoring programs
- **Macrophytes** are also examined if found
- Salinity (& **hydrological status** extension) seems to shape the communities of salt lakes primarily and then the availability of nutrients



B. MONITORING

physical, chemical & hydrological parameters (*in situ*):

- temperature
- pH
- dissolved oxygen
- electrical conductivity & salinity
- turbidity
- water level

frequency:

2020 – today: MONTHLY in 15 stations

2019 & before: EVERY 1 or 2 WEEKS in some lakes



C. MONITORING & SAMPLING

C1. In WATER:

- physical, chemical & hydrological parameters (*in situ*)
- nutrients, priority substances, chemical & microbiological parameters, ions, heavy metals: examined since 2017
- phytoplankton (species abundance and biomass & chlorophyll a): examined since 2014
- zooplankton: examined since 2014
- macrophytes: examined (if found) since 2019



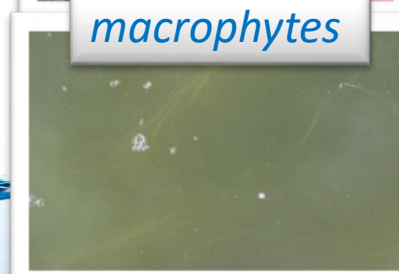
phytoplankton



zooplankton



macrophytes



C. MONITORING & SAMPLING

frequency:

2020 – today: MONTHLY in 13 stations

2019 & before: EVERY 1 or 2 WEEKS in some lakes

C2. In SEDIMENT:

priority substances, chemical parameters, heavy metals etc.

frequency:

2017 – today: YEARLY in 7 stations (one/lake)



C. MONITORING & SAMPLING OUTCOMES

- Phytoplankton and zooplankton knowledge is limited for these unique types of lakes (very shallow temporary salt lakes)
- No method for assessing the ecological quality, according to WFD 2000/60/EC
- Preliminary reference conditions were set for phytoplankton and zooplankton
- Extra data is collected frequently, to develop an **assessment method** for Cyprus natural lakes (i.e. to set the high-good, good-moderate etc. **boundaries**)
- **Salinity** seems to affect the communities of salt lakes primarily BUT recent data suggest that **bottom-sediment** effect is huge...



D. WATER QUALITY – 3rd RBMP

According to preparatory studies that will be the basis for the preparation of the 3rd RBMP:

- Most of the lakes have **unknown ecological** status/potential (based on phytoplankton), or **lower than good ecological** status/potential.
- Taking into account the zooplankton and the physicochemical parameters, it appears that **ecological reference conditions** were not achieved in any natural lake in the period 2014-2019.
- All of the lakes **fail to achieve good chemical** status (mainly due to metals)

CODE	NAME	ECOLOGICAL STATUS/POTENTIAL	CHEMICAL STATUS
CY_L7-2-6-70	Paralimni lake	Unknown potential*	Failing to achieve good
CY_L8-1-2-94	Oroklini lake	Unknown potential (Failing to achieve good)	Failing to achieve good
CY_L8-3-2-82	Larnaka's main lake	Unknown quality (Failing to achieve good)	Failing to achieve good
CY_L8-3-2-85	Aerodromiou lake no. 2	Unknown quality (Failing to achieve good)	Failing to achieve good
CY_L8-3-2-88	Orfani lake	Unknown quality *	Failing to achieve good
CY_L8-3-2-96	Soros lake	Unknown quality *	Failing to achieve good
CY_L9-5-3-50	Akrotiri lake	Unknown quality *	Failing to achieve good

* Due to the lack of sufficient data for the years 2014-2017, 2018-2019 result is adopted as representative for the entire evaluation period.





Thank you



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