Electronic Supplementary Material
ESM_5. Additional figures of sampling sites and algae

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Food algae for Lesser Flamingos: a stocktaking

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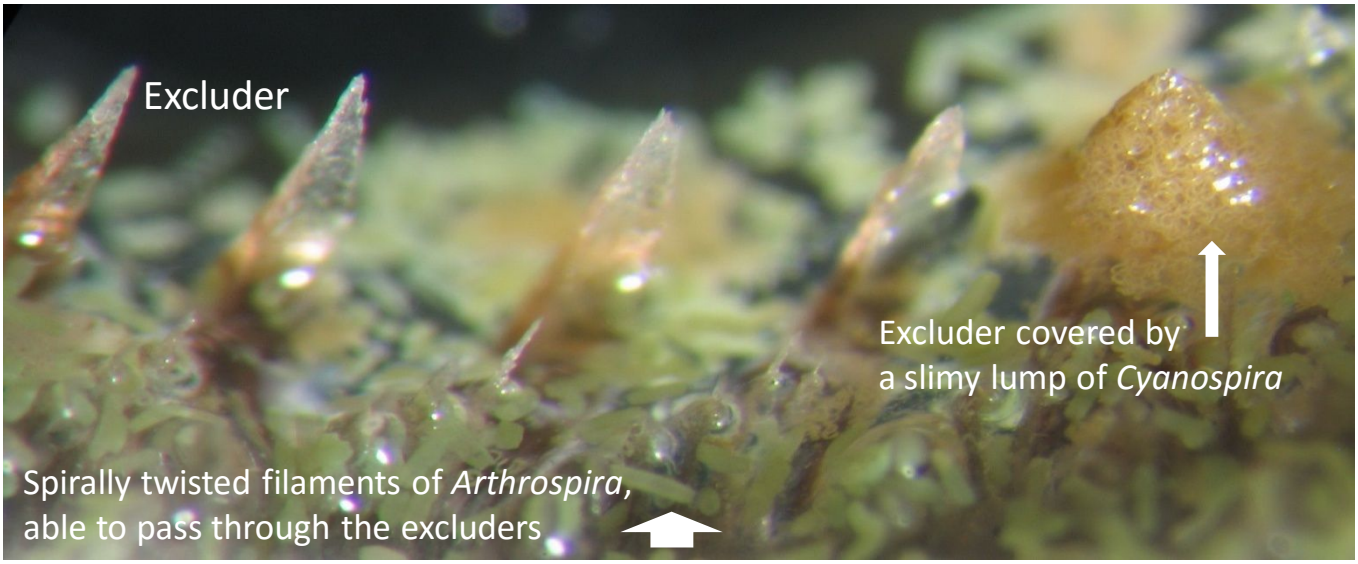
Lesser Flamingos at Lake Bogoria (January 2011)

Lesser Flamingo in feeding position

Arthrospira fusiformis, the main food of Lesser Flamingos

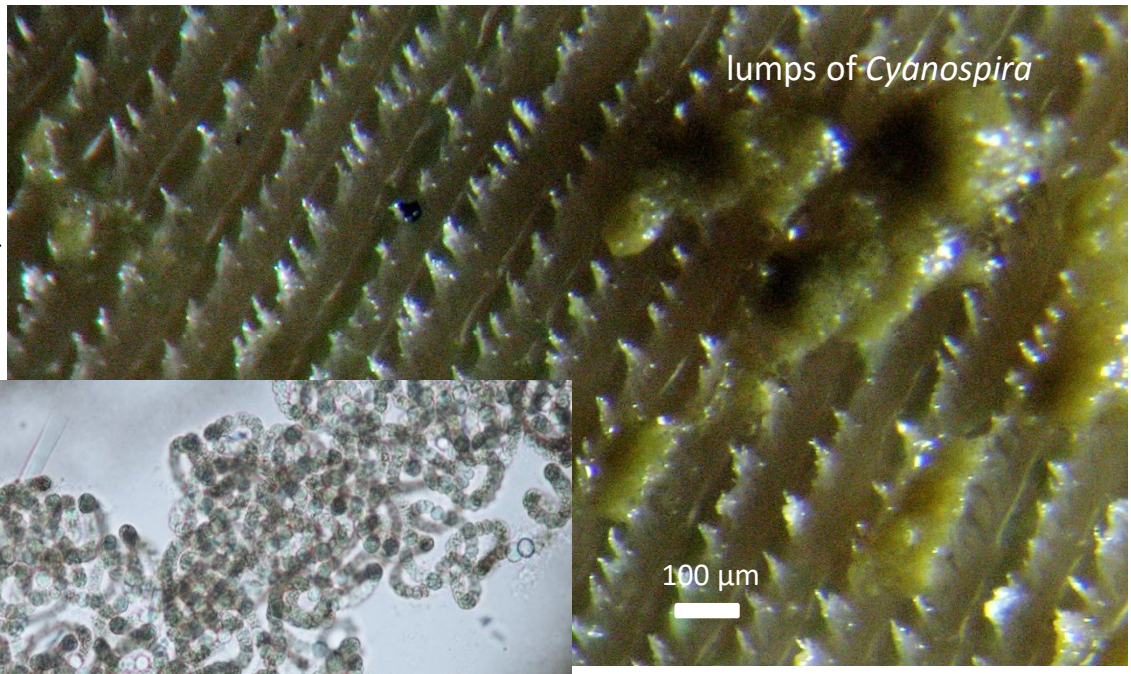
Dense scums of *Arthrospira fusiformis*, Lake Bogoria, south bay (January 2010)

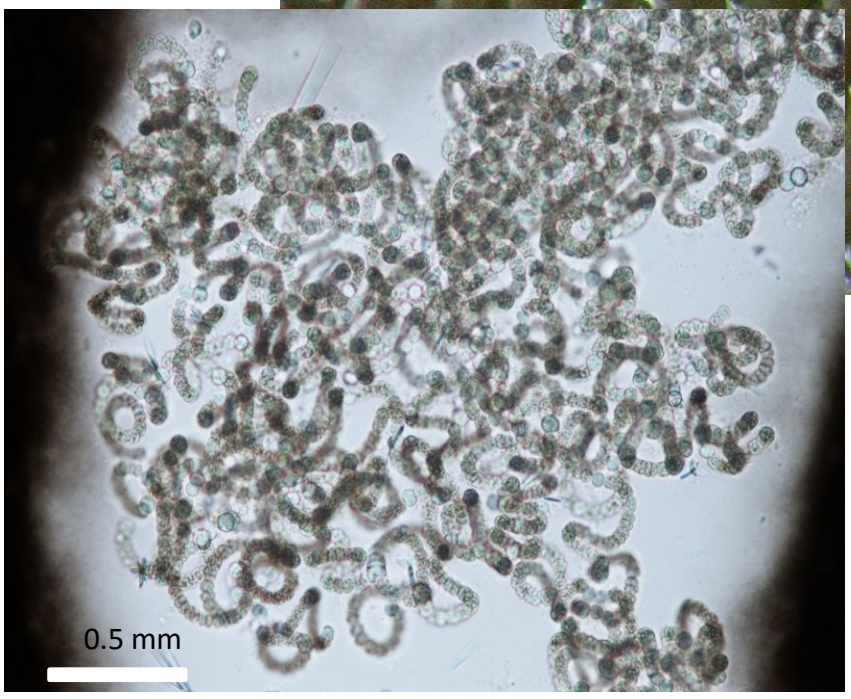
Filter tools in the bill of Lesser Flamingo



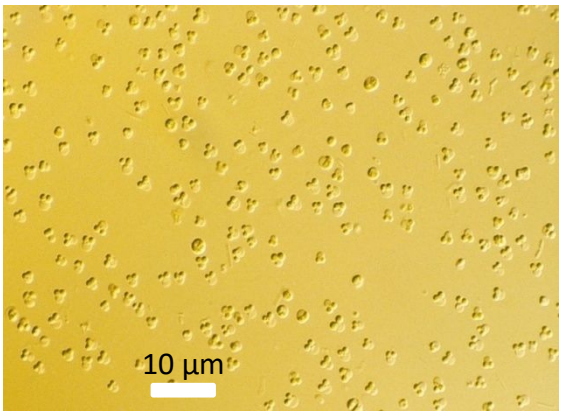
View from outside showing a row of excluders

Inside the bill:
Filter lamellae
equipped with
fringed platelets





Cyanospira capsulata, negative staining with
Indian ink shows the slimy envelope.
This colony is too large for ingestion by Lesser Flamingo.



In contrast, the tiny picoplanktonic
Picocystis salinarum is too small to be
catched by the filter apparatus.

Different hydrological regimes at Lake Bogoria, Geyser area, Kenya

Low water level in September 2006

Hot spring cyanobacteria

Flooded geyser area in November 2010

Chemurkeu hot springs area at the shore of Lake Bogoria

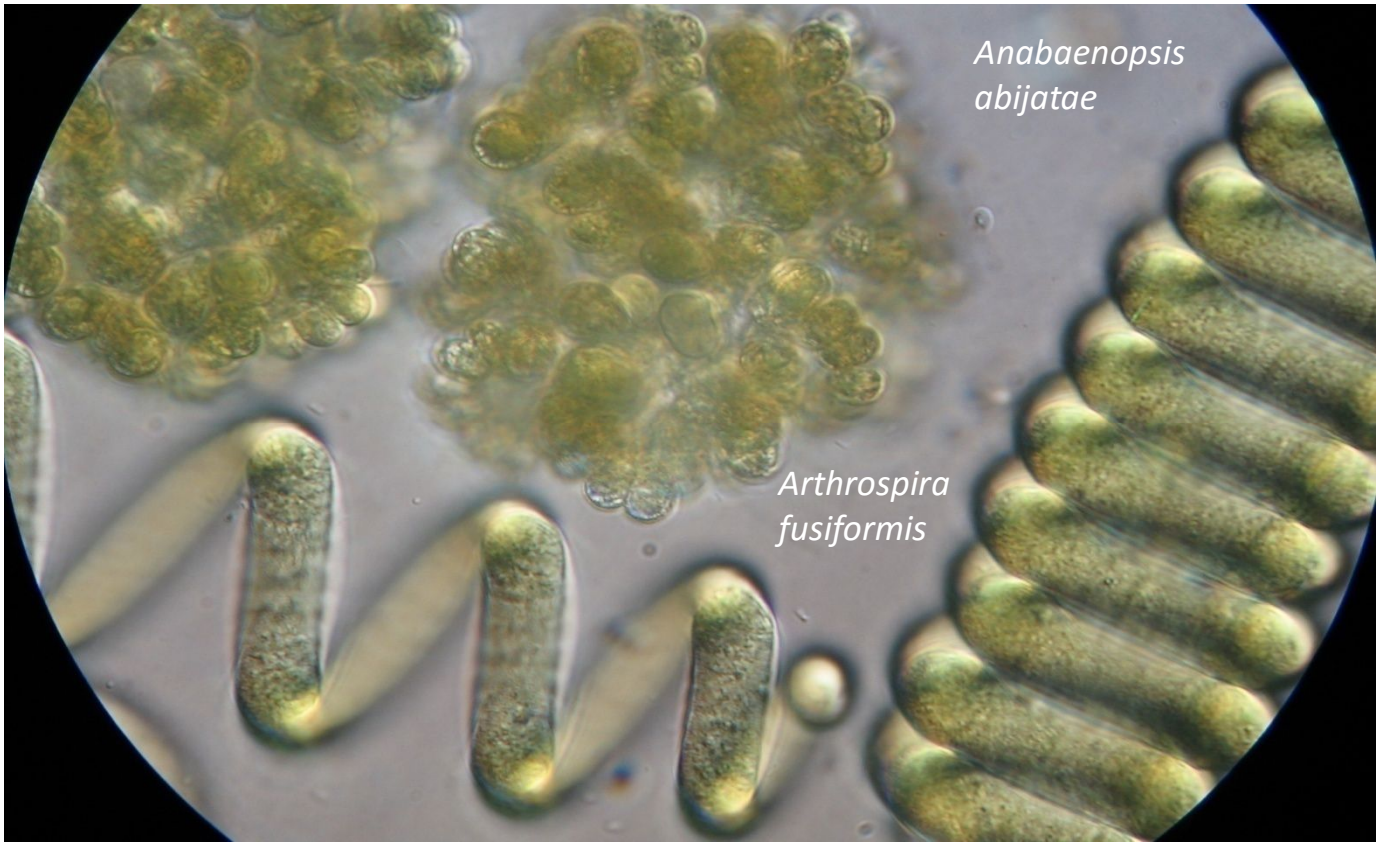
Flamingos came for drinking and washing their feathers in January 2011

In January 2015, the area was flooded, the microphytes of the two contrasting habitats (lake and hot springs), occurred together in the cyanobacterial aggregates floating in the water.

Lake: (Ar) *Arthrospira*, (An) *Anabaenopsis*,
Hot Springs: (S) *Spirulina*, (L) *Leptolyngbya*

Life at Lake Nakuru

Lesser Flamingos at Lake Nakuru, January 2009



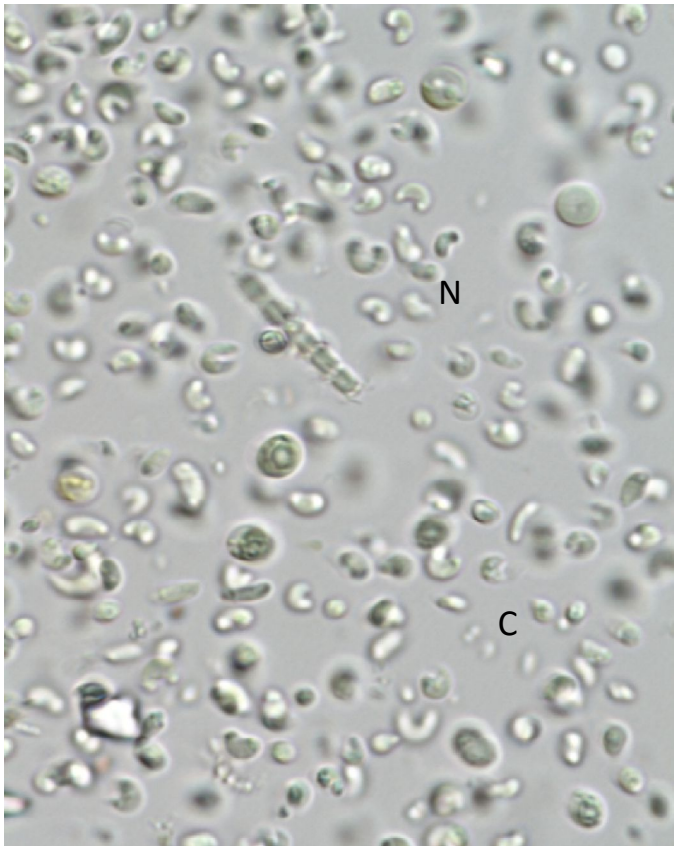
Arthrospira as food of Lesser Flamingos in Lake Nakuru was never found in monospecific developments, but was always associated with *Anabaenopsis abijatae* and other Nostocales.

Two extreme hydrological situations at Lake Nakuru

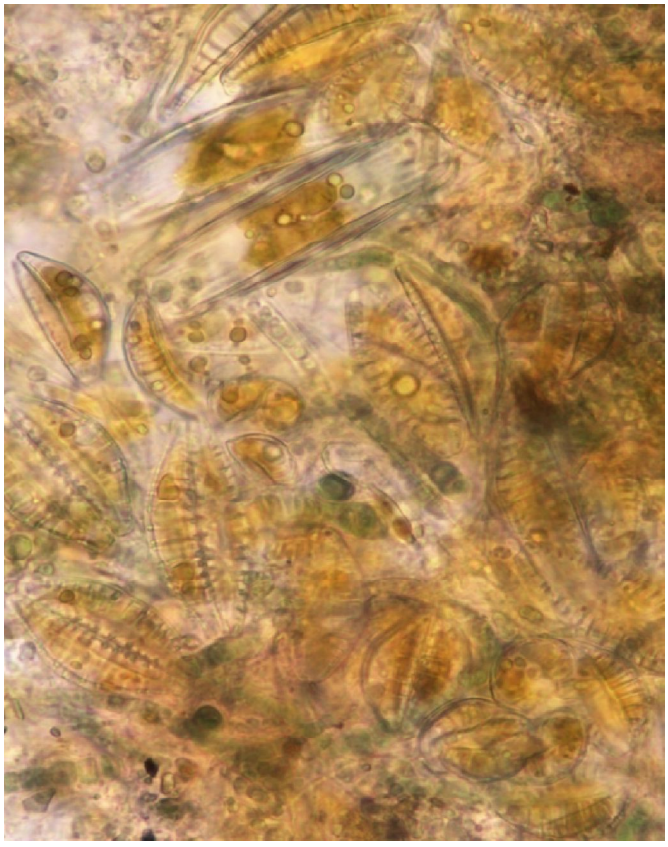
Lake Nakuru, August 2006. The lake was nearly dried out, in the foreground deserted flamingo nests, behind the tracks of the offroad-vehicle flamingo carcasses are distributed over the dried lakes bottom.

Lake Nakuru, November 2012 with elevated water level.
Such situations did not support Lesser Flamingos.

Highly diluted water (salinity 3.6 ‰) supports planktonic coccoid chlorophytes and eustigmatophytes as well as benthic diatoms.
No *Arthrospira* was found, and Lesser Flamingos left the lake.



Coccoid chlorophytes (cf. *Picochlorum* sp. [C]) and capricorn-shaped eustigmatophytes (*Nephrodiella* sp. [N]) dominate the plankton.



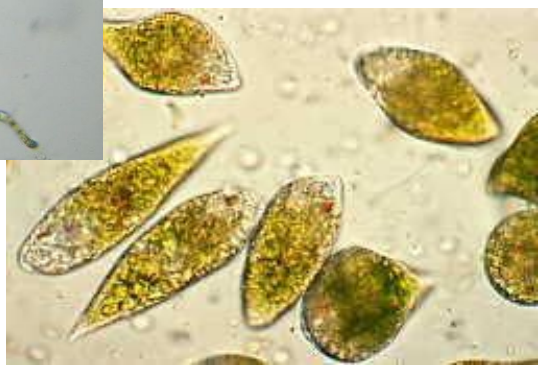
Pennate diatoms from the sediment: *Rhopalodia gibberula*, and *Nitzschia* sp.

Nakuru town sewage oxidation ponds inside of the National Park attracting game

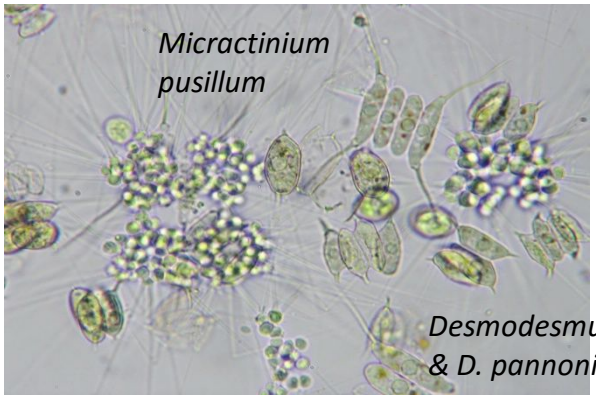
Ponds visited by Lesser Flamingos

Arthrospira fusiformis

Euglena sp.



Outlet of final sewage oxidation pond flowing into Lake Nakuru transfering microphytes



Micractinium pusillum

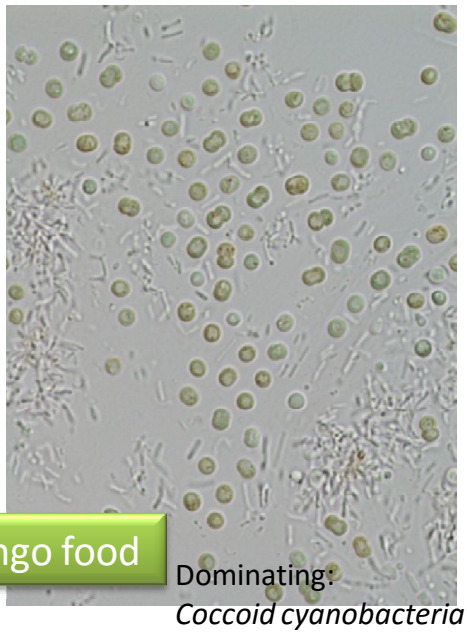
Desmodesmus opoliensis & D. pannonicus

Three stages of Lake Elmentaita

Suitable flamingo food

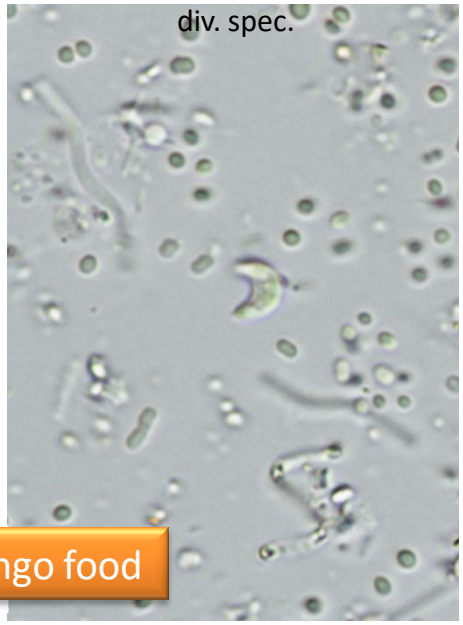
Anabaenopsis arnoldii *Arthrospira fusiformis*

No suitable flamingo food



Dominating:
Coccoid cyanobacteria
div. spec.

No suitable flamingo food



Lake Elmentaita, October 2011

Temporary and locally available alternative flamingo food: *Haloleptolyngbya alcalis*

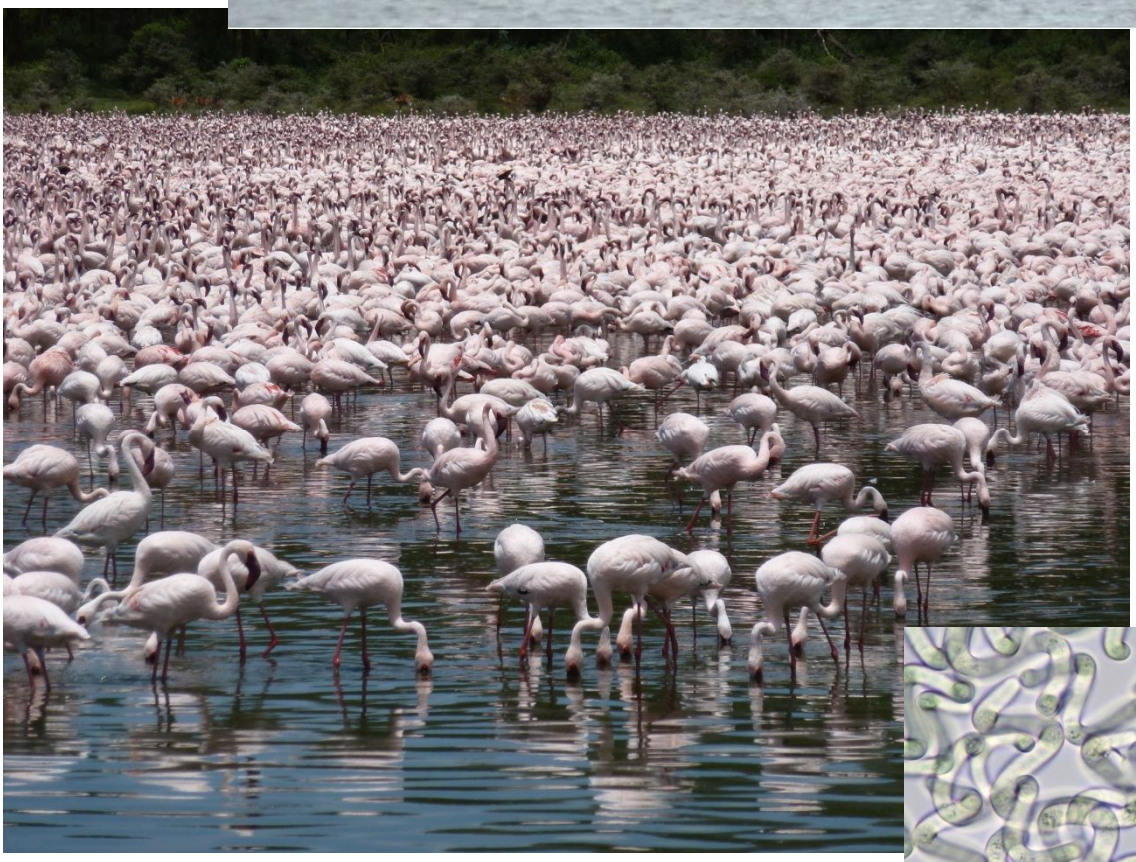
Lake Magadi, January 2010

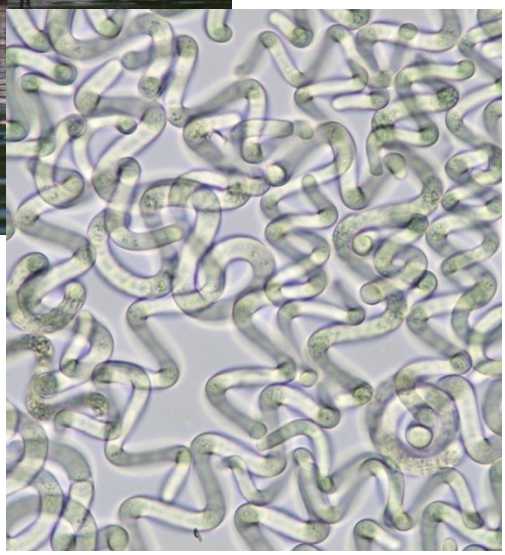
Lake Magadi with hot springs and flamingos

Driving through a saline (80‰) lagoon of Lake Magadi

1 *Phormidium* sp.
2 *Aphanothece* sp.
3 *Synechocystis salina*
4 *Myxobactron* sp.

Lake Oloidien, April 2012, temporary hot spot of flamingo life



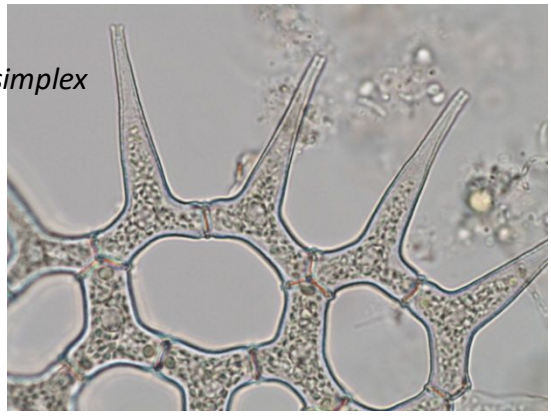


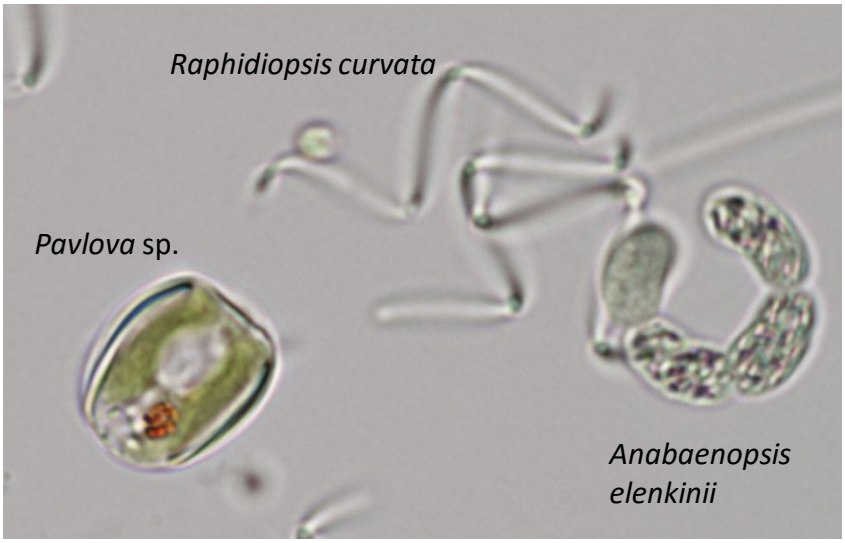
Arthrospira fusiformis,
small sized ecotype

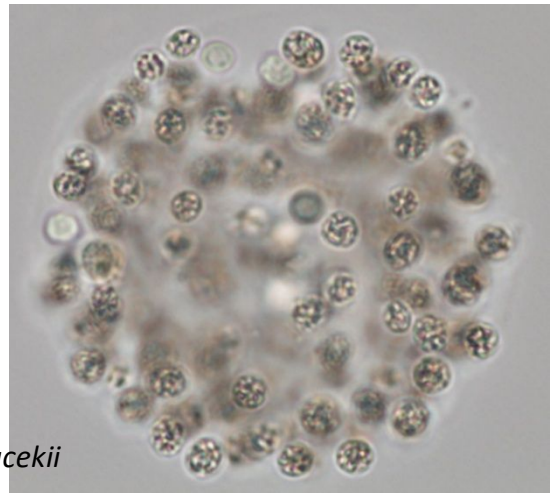
Lake Oloidien, January 2015

Flooding induced nearly fresh water conditions,
Arthrospira and flamingos disappeared

Monactinus simplex







Microcystis novacekii

Lake Big Momela, Arusha National Park, Tanzania

Oct 2002, flocks of Lesser Flamingos feed on dense *Arthrospira* bloom

Oct 2015, the water contained dense *Arthrospira* bloom, however, only few flamingos remained at the lake
(see arrows photo leftside below)

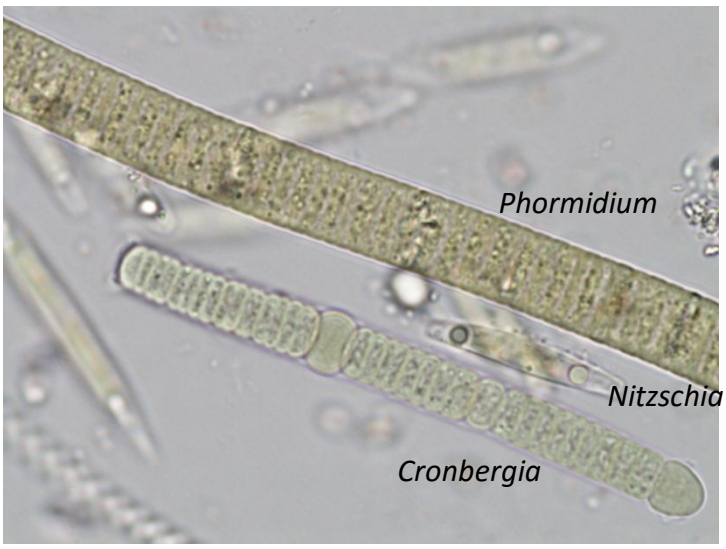
Lake Burunge, Oct 2015

Anabaenopsis arnoldii

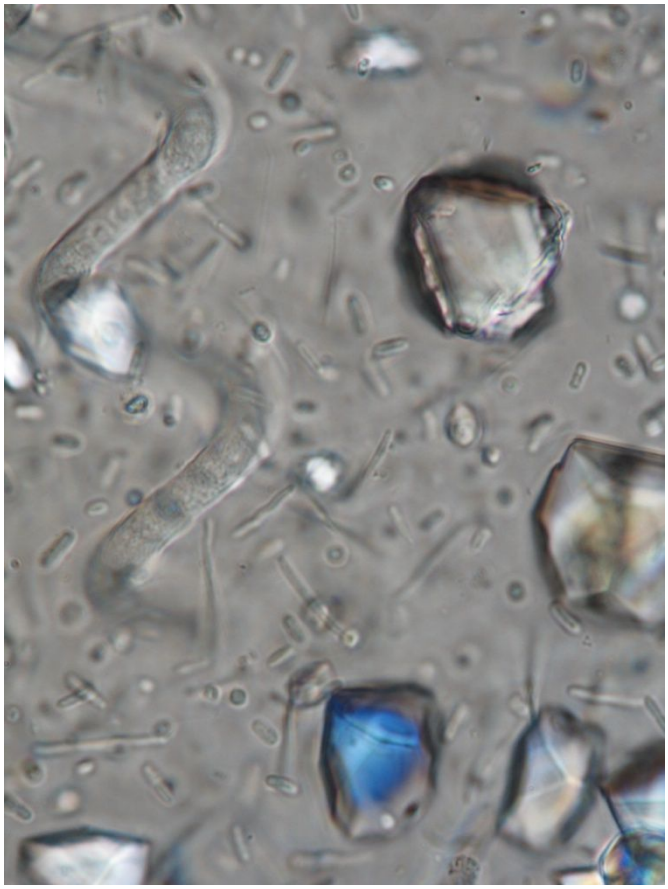
No flamingos were observed, however, the shoreline was full of flamingo feathers indicating massive presence of the birds some time before.

Lake Natron, Oct 2015

Waterhole with algal growth
and flamingo pugs on the mud



The lake is divided into small ponds for salt production

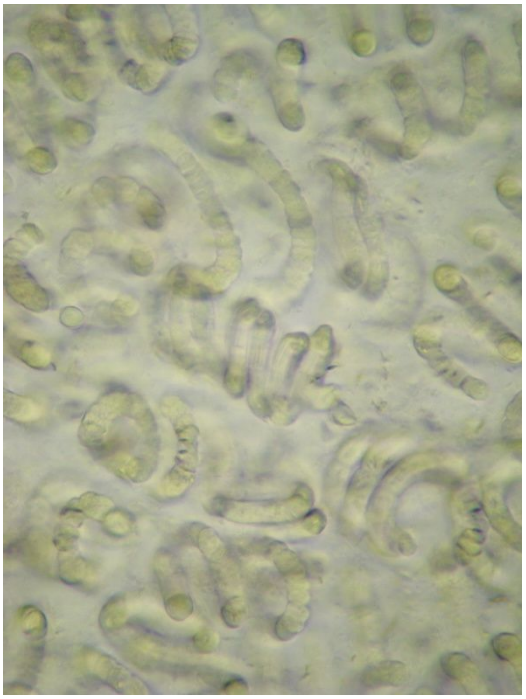


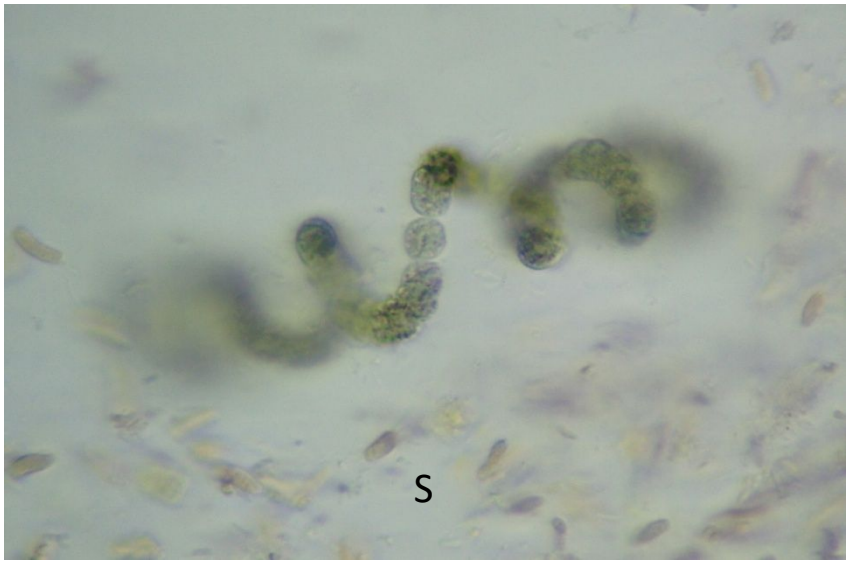
Arthrospira and *Synechococcus*

Synechocystis and *Leptolyngbya*

Aerial views on the breeding sites of Lesser Flamingos in the Etosha Pan, Namibia, 2008

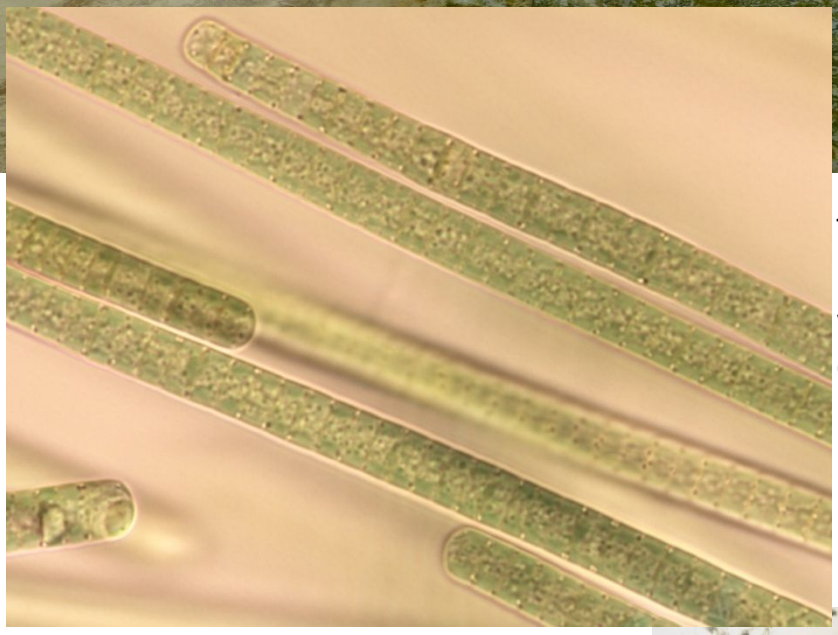
Saltpan in northwestern Etosha, November 2008



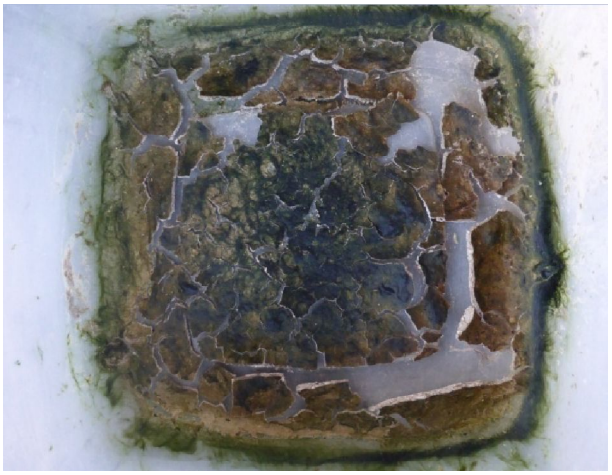


Long spirales of *Anabaenopsis* sp.
and sulphurbacteria (S)

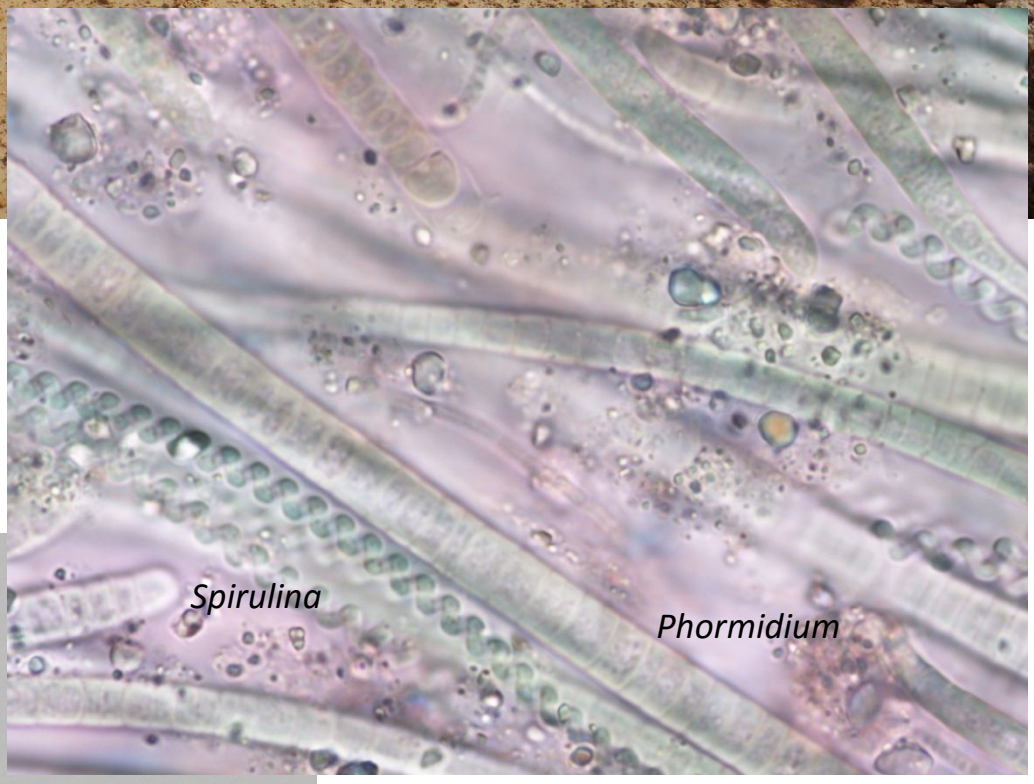
Okondeka spring, Etosha National Park, March 2014

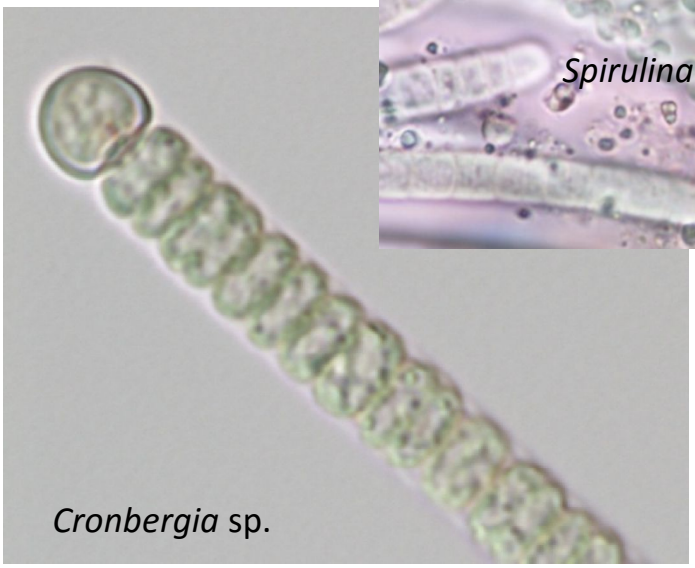


The spring is covered by monospecific mats of *Phormidium etoshii*, which have a distinct appearance depending on moisture



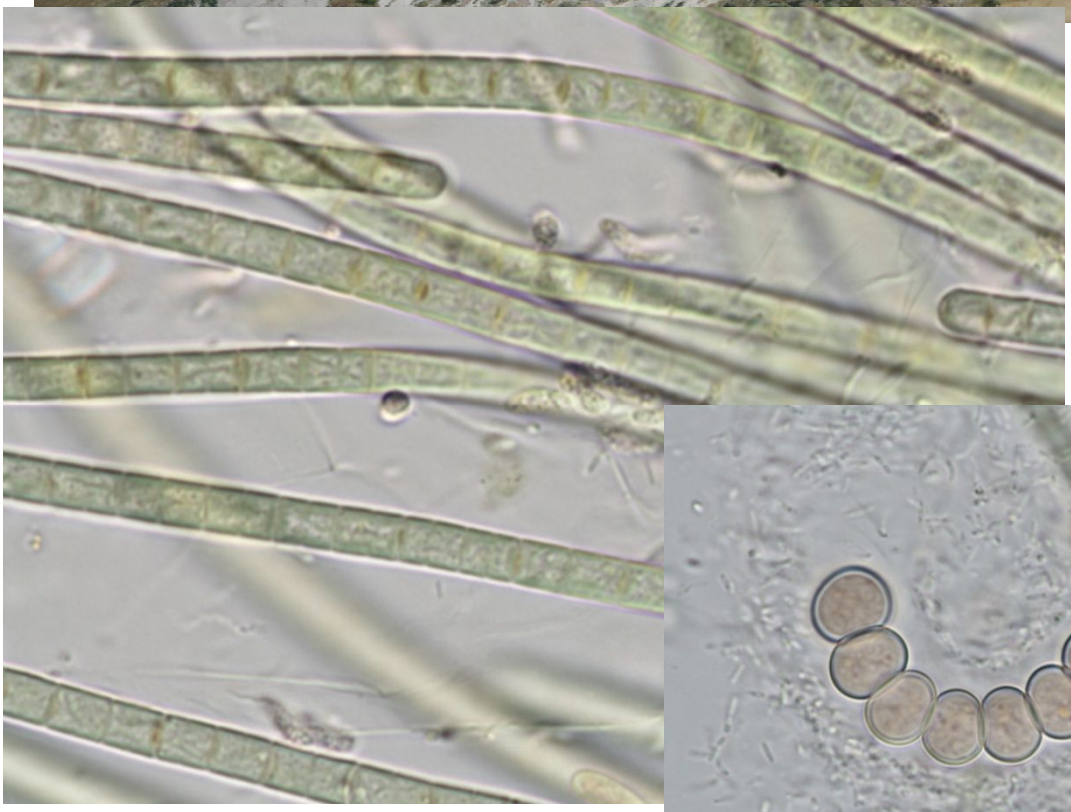
Springbokfontein, Etosha National Park, March 2014





Cyanobacterial mats in this spring are more diverse than in Okandeka spring

Cyanobacterial mats at a branch of the Ekuma river mouth, March 2014

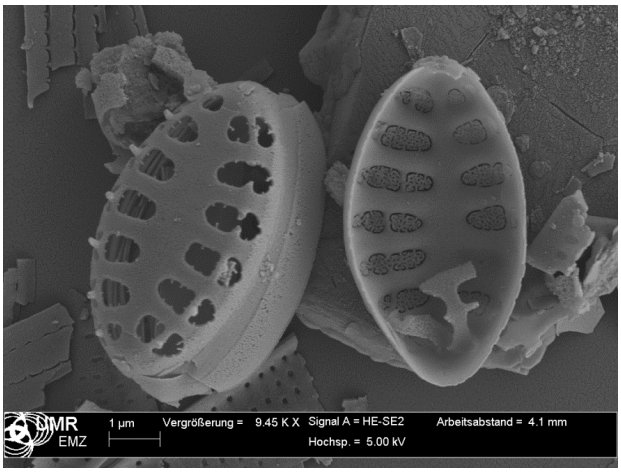


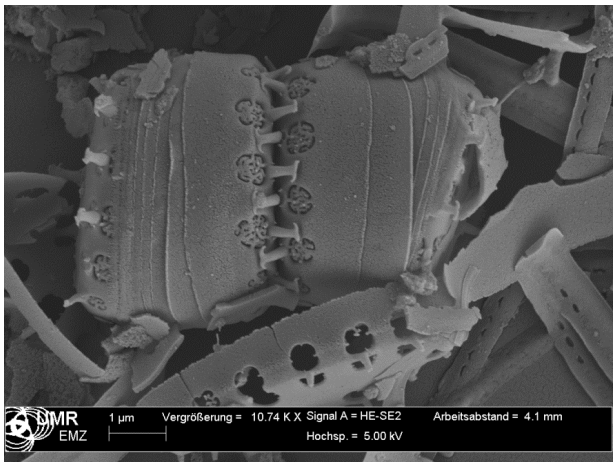
Phormidium sp.

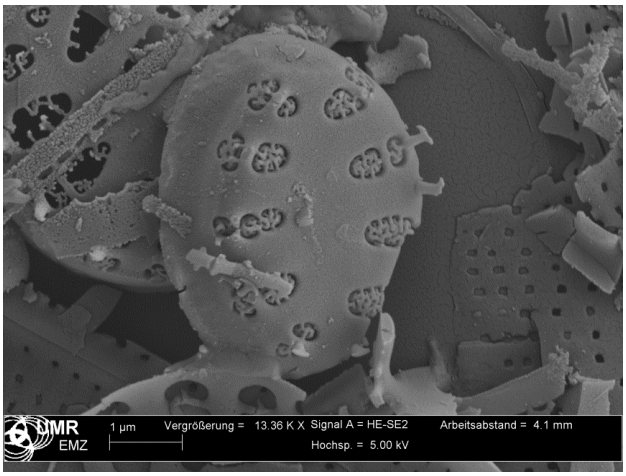
Cyanospira sp.,
chain of akinetes

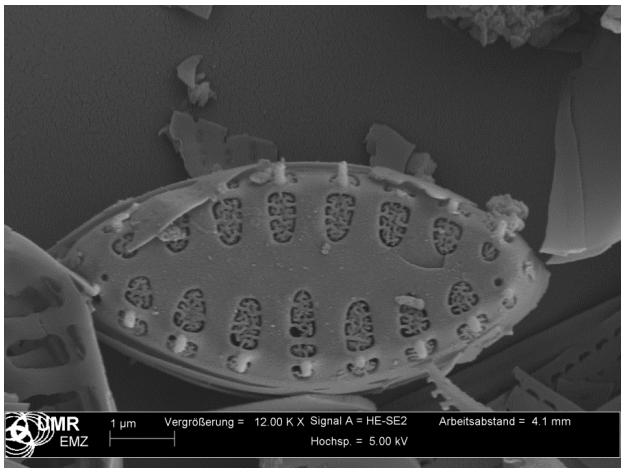
Guano & Salt Company, Swakopmund, March 2014: Salt Pond 1

Water column is clear, however, few flamingos collecting diatoms from sediment





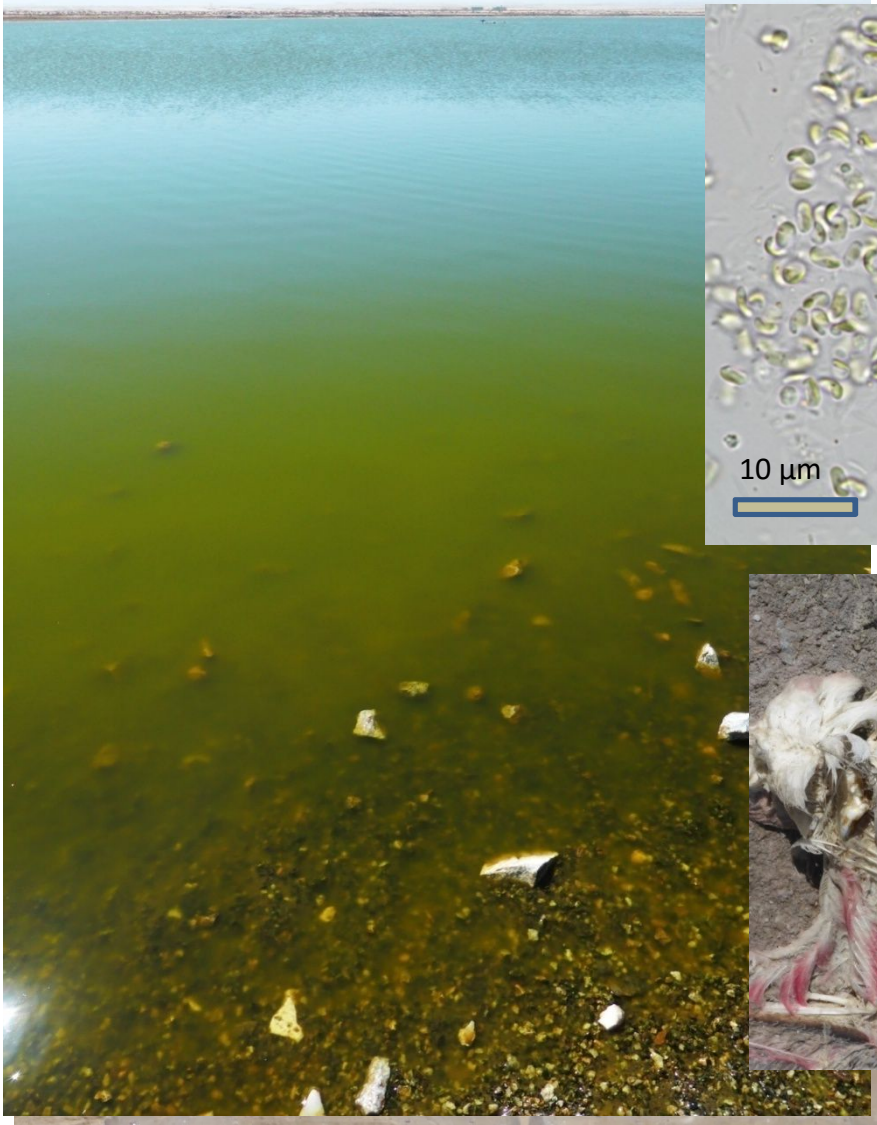




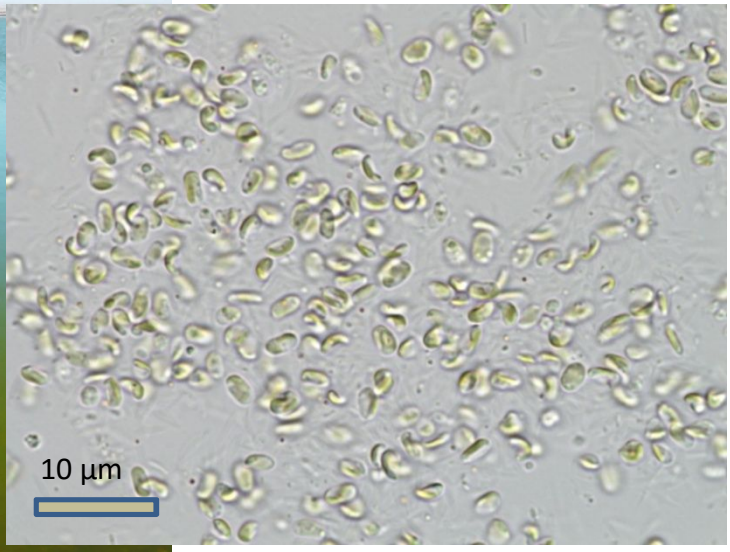
Opehora sp., the most dominating diatom in the pond.
Majority of the cells are too small for ingestion by Lesser Flamingos

Guano & Salt Company, Swakopmund, March 2014

Salt pond 2

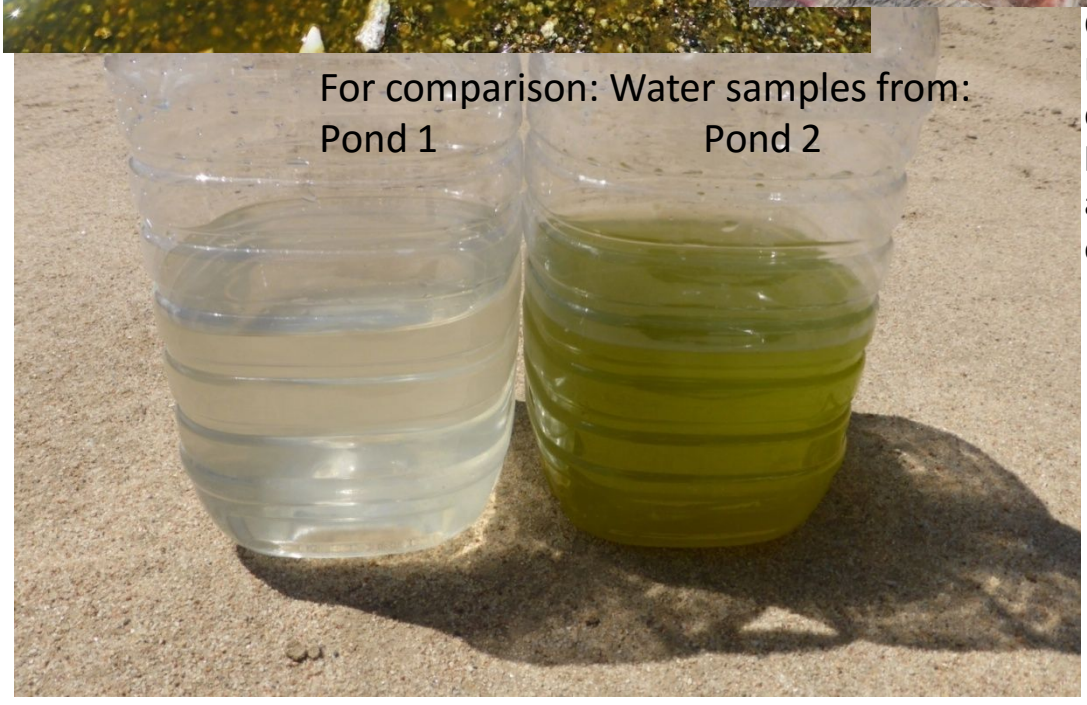


Vegetation colour by
Microchloropsis salina



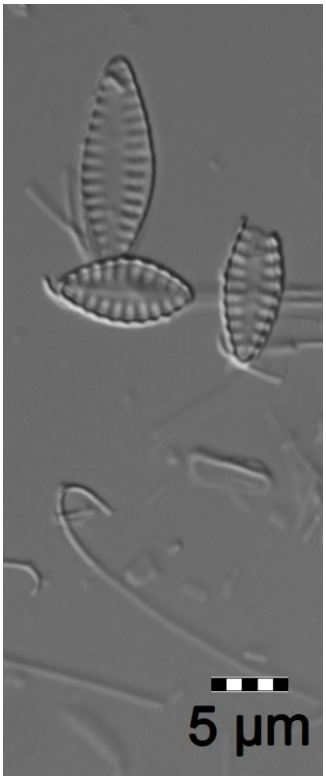
Carcasse of a Lesser Flamingo, died in the area because of starvation, according to veterinary examination

For comparison: Water samples from:
Pond 1 Pond 2

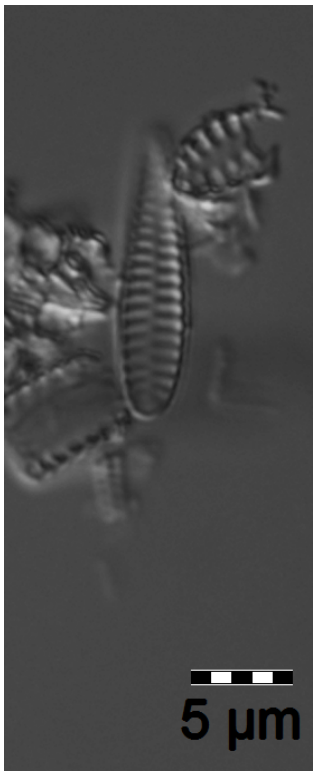


Lesser and Greater Flamingos at Lagoon of Walvis Bay, March 2014

Common diatoms in the lagoon



Opephora sp.



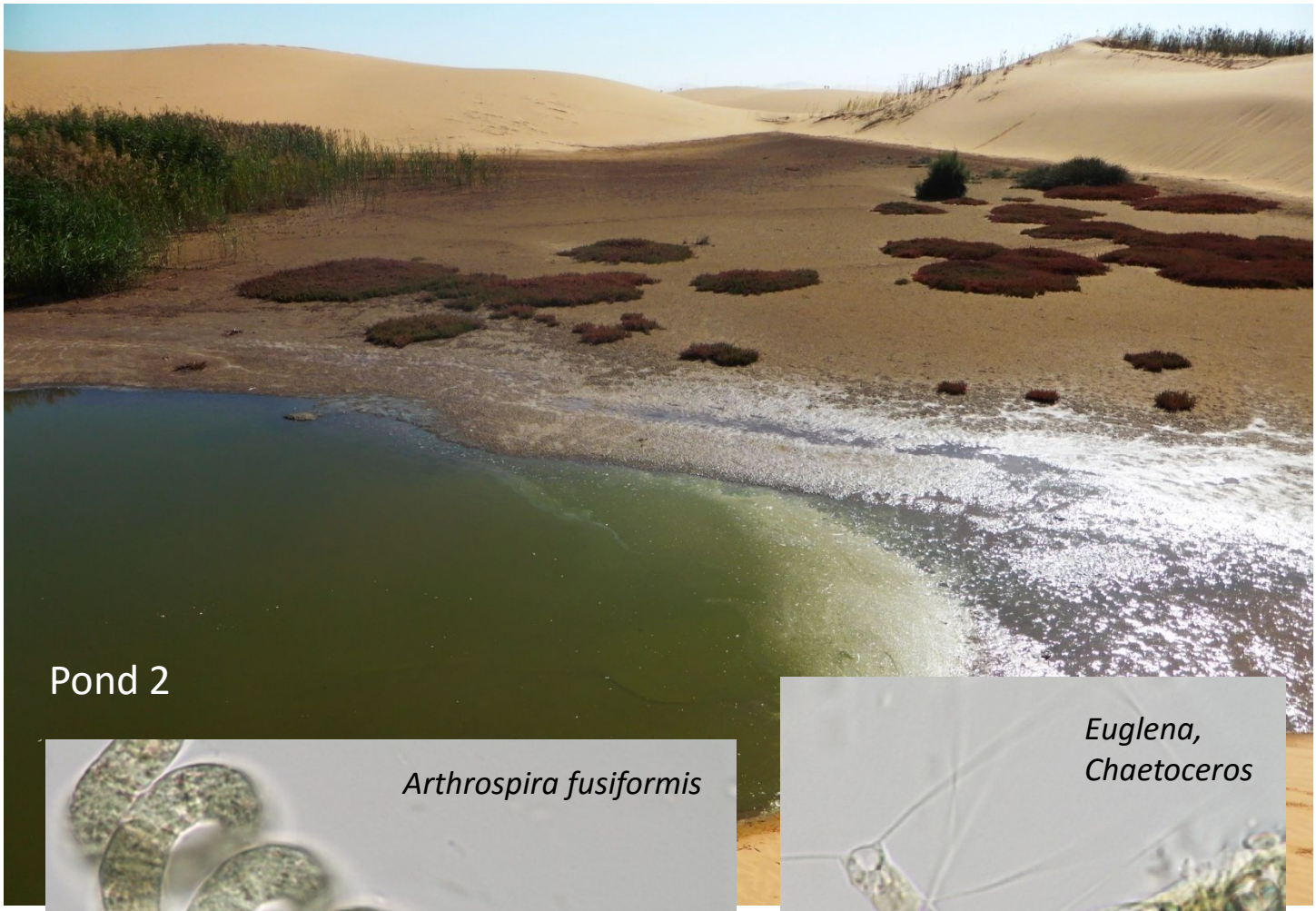
Opephora cf. *olsenii*

Navicula cf. *halinae*

Arthrospira fusiformis and *Oocystis* sp.

Euglena sp.

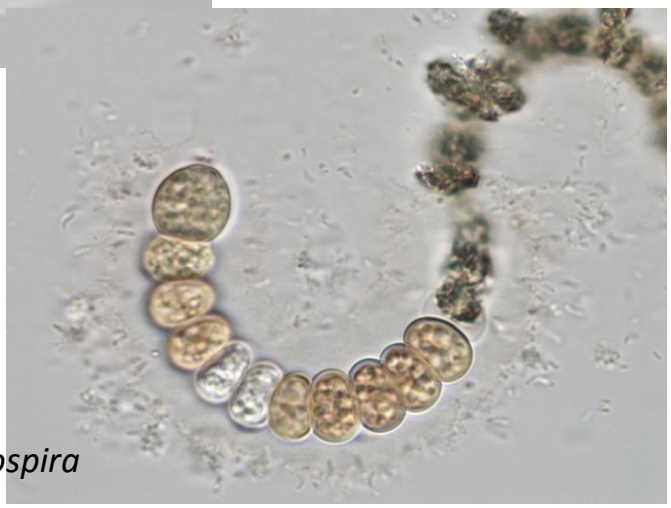
Sewage outfall ponds, Birds Paradise, Walvis Bay, March 2014



Pond 2

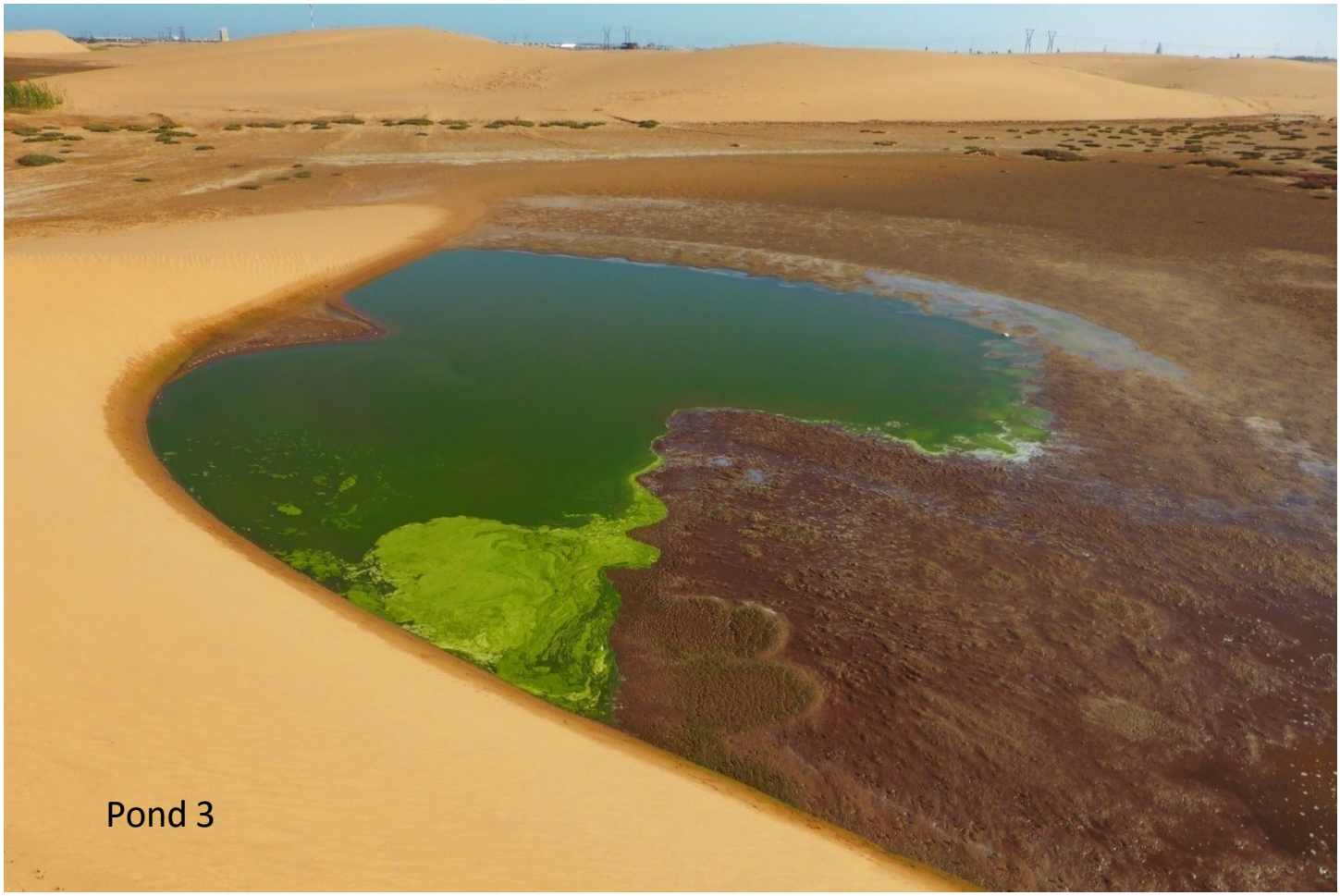
Arthrospira fusiformis

Euglena, Chaetoceros



Cyanospira

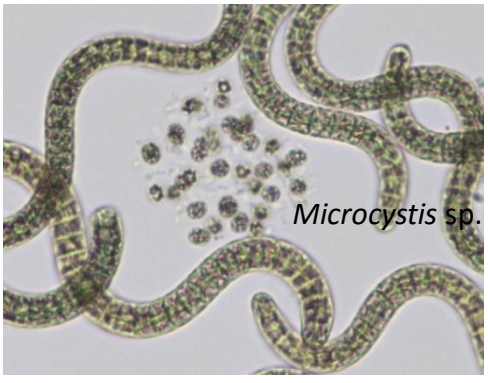
Sewage outfall ponds, Birds Paradise, Walvis Bay, March 2014



Pond 3

Tetraselmis sp.

Kamfers Dam,
Kimberley, South Africa,
home of the first artificial
breeding island
for Lesser Flamingos



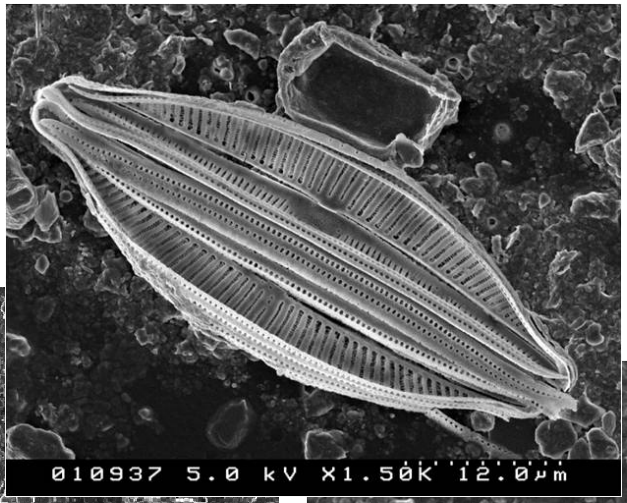
Little Rann of Kutch, Gurarat, India, October 2006

Sanctuary of the Indian Wild Ass

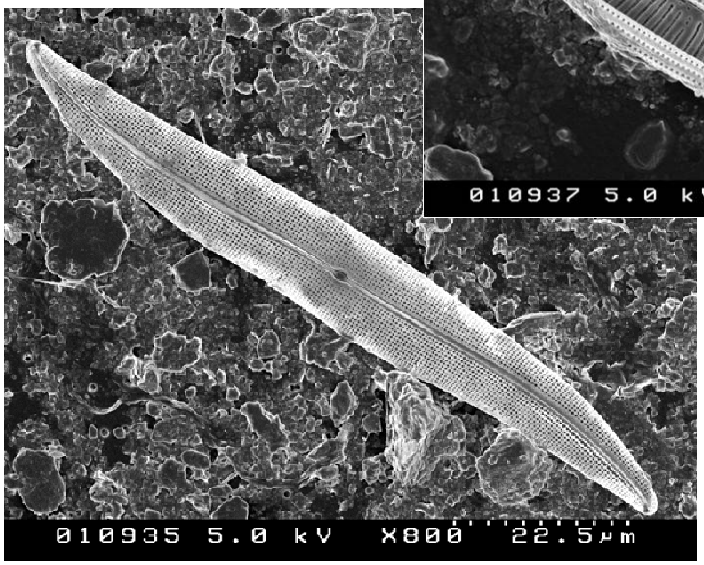
Salt harvesting at Little Rann of Kutch, October 2006

Salt water from the ground transfered by pumping into salt evaporation ponds

Pennate diatoms at Little Rann of Kutch

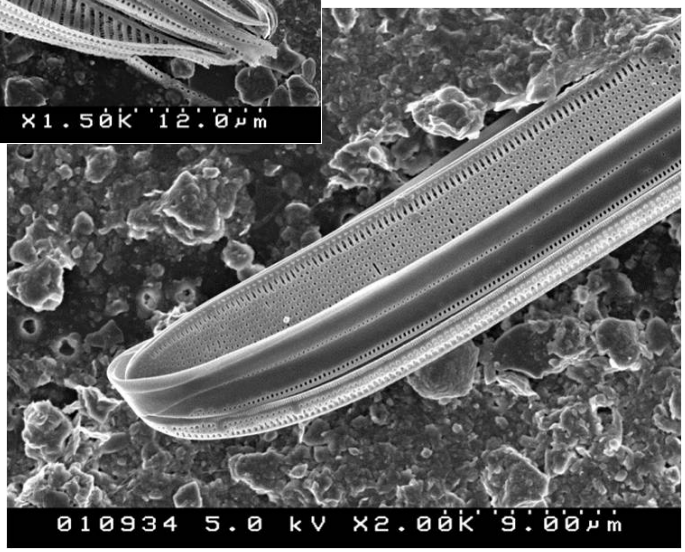


Amphora sp.



Gyrosigma cf. *acuminatum*

Nitzschia scalpelliformis



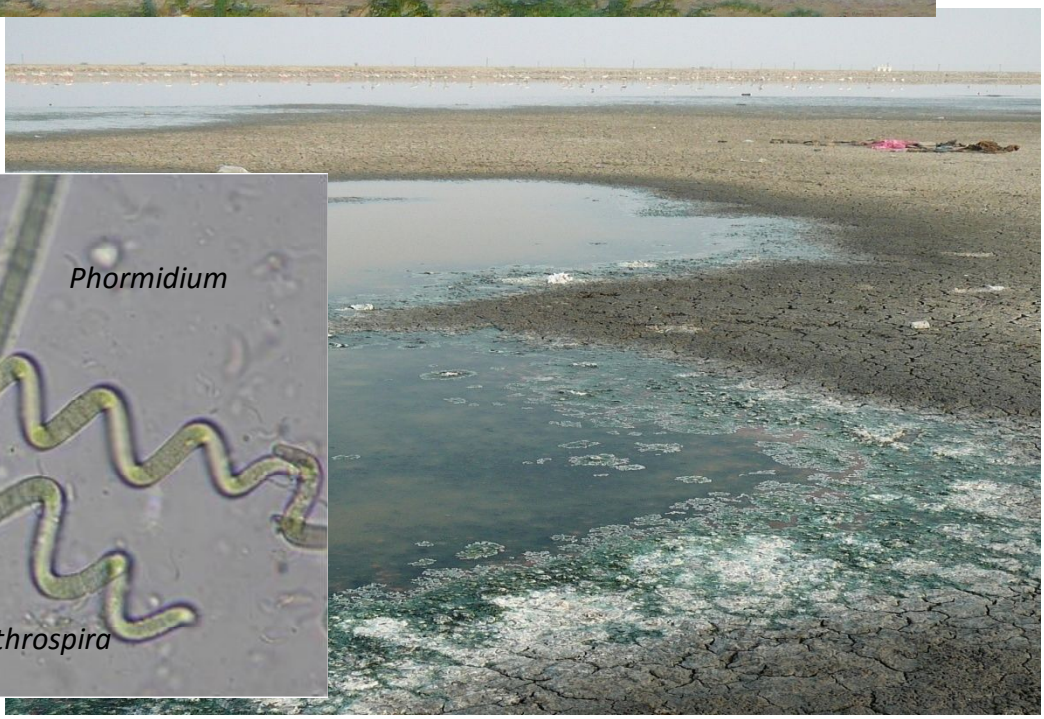
Flamingo nesting site at Little Rann of Kutch, October 2006

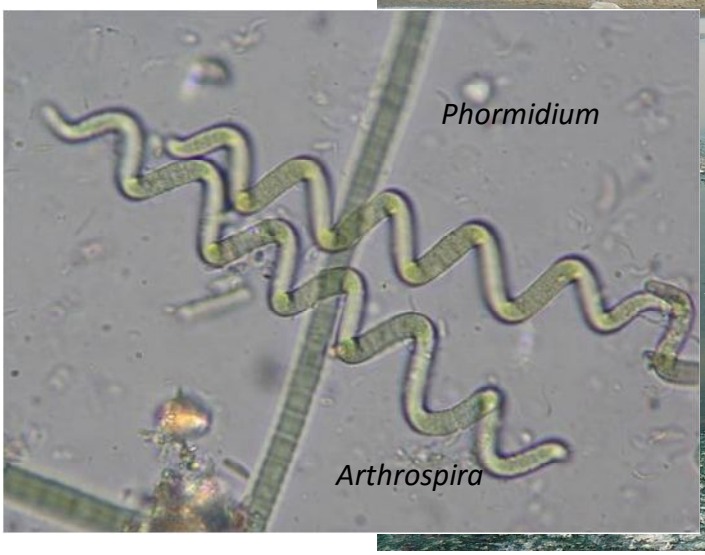
Adult Lesser Flamingos left the deserted nests because of low availability of water and food algae

Lake Sambhar, Rajasthan, November 2006

Predominance in phytoplankton
by *Dunaliella* sp.
which forms ornamental neustonic skins
on the brines surface

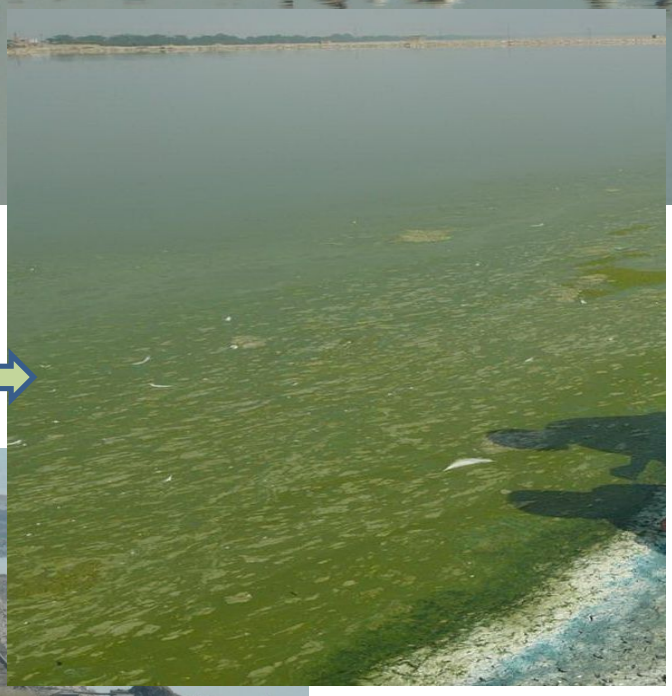
Dam near Lake Sambhar, November 2006





Lake Sambhar, Reservoir zone with salt ponds, May 2014

Arthrospira bloom



Dunaliella bloom

Arthrospira