

Diversity II product application showcase: Lake Natron, Tanzania

Watching over the Lesser Flamingos' breeding grounds

Lake Natron drew the attention of a wider audience as the set of "The Crimson Wing - Mystery of the Flamingos" in 2008. It's the preferred breeding ground for Lesser Flamingos (*Phoeniconaias minor*), with about 75% of all individuals being born there.

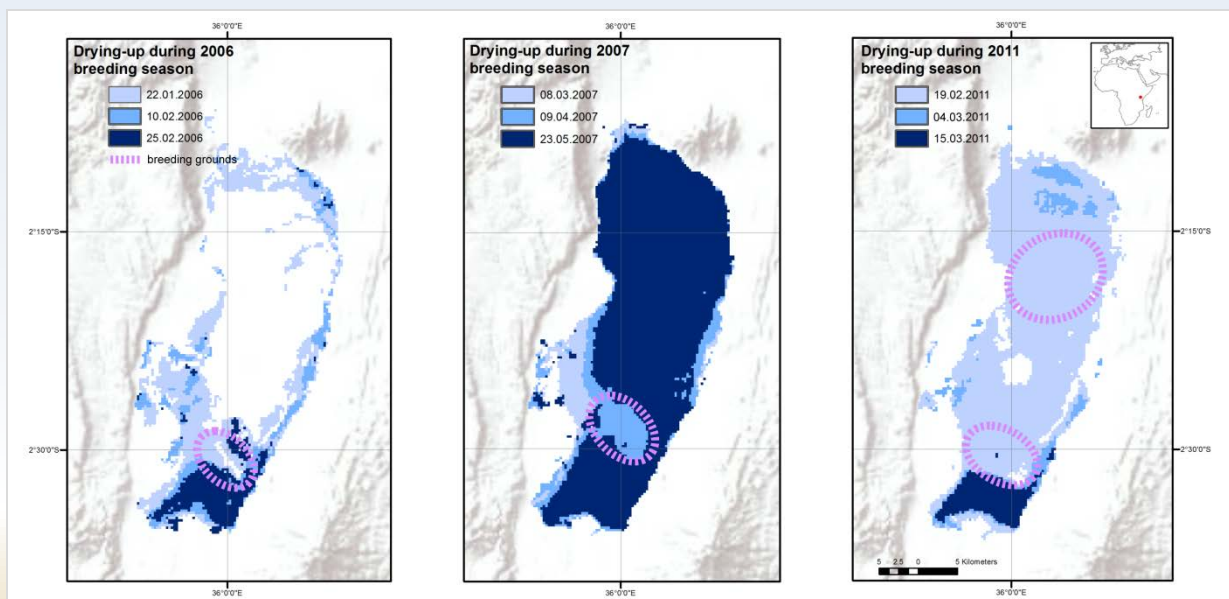
The flamingos' preference for Lake Natron is linked to its distinct variability in extent. First of all, retreating water exposes soft trona and mud that is used for nest building. Furthermore, the lake is a source of water and food, and protection from predators. On the other hand, advancing water puts the nests at risk of being flooded. The described favourable conditions are required to last at least one but ideally two months in order to allow for the chicks to completely fledge.

The catchment of Lake Natron is challenged by increasing population, land use change and degradation. Furthermore, plans to dam the Ewaso Ngiro feeder river North of Lake Natron

threat the natural hydrological variability which is required for suitable breeding conditions. Dr. Emma Tebbs of the UK's Centre for Ecology and Hydrology and Prof. David Harper of the University of Leicester identified satellite Earth Observation data as suitable for monitoring the lake's hydrology: "The frequency of observations and accuracy of extent estimates provides a valuable basis for future predictions of flamingo nesting likelihood."

The scientists' requirements were addressed in the scope of ESA's Diversity II project. More than 1000 observations by the ENVISAT MERIS sensor between 2002-2012 were processed, and a time series of extent estimates was compiled. Similar products will now be produced for Lakes Logipi, Manyara and Eyasi, which are the Flamingo's preferred feeding sites in the area.

Diversity II will also address the continuation of biodiversity indication by Earth Observation, using Europe's future Sentinel satellite fleet.



The maps depict the retreat in lake extent during three water retreat periods with documented breeding activities. The Gelai mudflats in the South are the preferred breeding ground, since the Southern lagoon provides the most reliable water resource even in the dry season. Occasional breeding is observed in the Shompole mudflats further North.