

Water crisis in Mayotte : the lagoon as a receptacle for health, social and emerging environmental impacts

LONGÉPÉE Esméralda¹, CHEVALIER Cristele^{2*}, BIGOT Lionel³, CHABANET Pascale³, GOLLÉTY Claire^{4,5}, LEBORGNE Mathieu⁶, SUCRÉ Elliott^{4,5}

¹ UMR 8586 PRODIG, Université Paris 1 Panthéon-Sorbonne, CNRS, IRD, AgroParisTech, Aubervilliers, France

² Aix Marseille Université, Université de Toulon, CNRS, IRD, MIO, Marseille, France

³ UMR 9220 ENTROPIE, Université de La Réunion – IRD – CNRS – IFREMER – UNC, Saint Denis, France

⁴ MARBEC, Université de Montpellier, CNRS, IFREMER, IRD, Montpellier, France

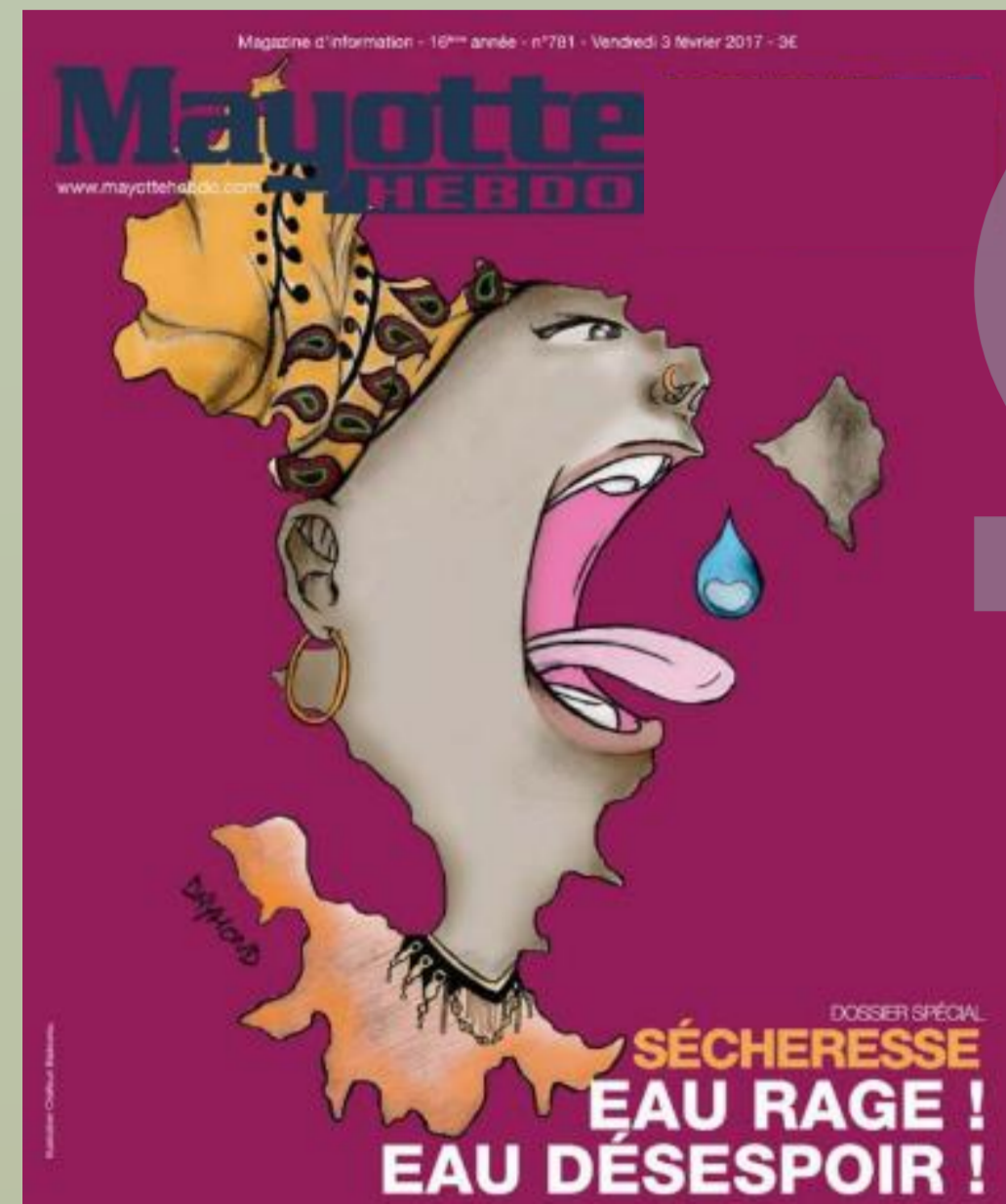
⁵ Université de Mayotte, 97660 Dombeni, Mayotte, France

⁶ Mediterranean Institute of Oceanography, France

* Contact : cristele.chevalier@mio.osupytheas.fr



Introduction



In Mayotte, water shortages since 2017

Mayotte, a French island located in the Indian Ocean

The two hillside reserves, as well as local drillings and the only desalination plant on the island are no longer sufficient to supply the population, particularly during drought years such as the ones in 2023 and in 2017.

Mayotte in 2025 : 321,000 inhabitants on 374 km²
850 inhab./km²

Since 1958, the island's population has grown tenfold, doubling between 1997 and 2017.

In 2023, repeated tap water cuts, more or less scheduled, with at the **worse period 18 hours of open water for 54 hours of water cut** increased the social inequality.



56% of people living in slum houses are not connected to the water supply (Thibault, 2019)

Recurrent water crises are destabilizing the island of Mayotte. Following a severe drought after the 2023 rainy season, the State has issued a "civil emergency", a **prefectural decree to accelerate the construction of a second desalination plant**. The paradox here is that nothing had really been done after the water crisis of 2017. This decision highlights the increasingly structural nature of water scarcity on the island. This **instrumentalization of the water crisis of 2023** is a way for the Prefecture to overrule French legislative regulations to mitigate the ecological impact of development projects.

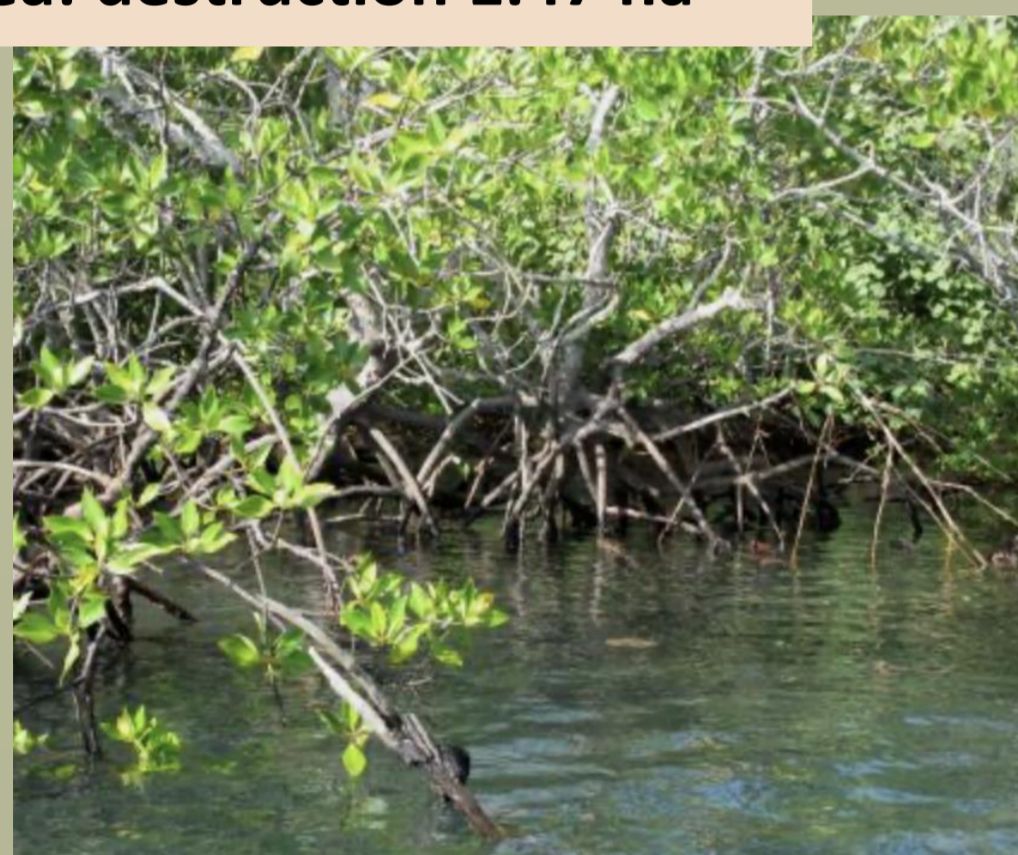
The planned desalination plant is controversially located in :

- an ecologically sensitive area where lagoon waters stagnate.
- a place of accumulation of lagoon waters, with a little diffusion and assimilation of the water plant's discharges.



Environmental impacts of the desalination plant

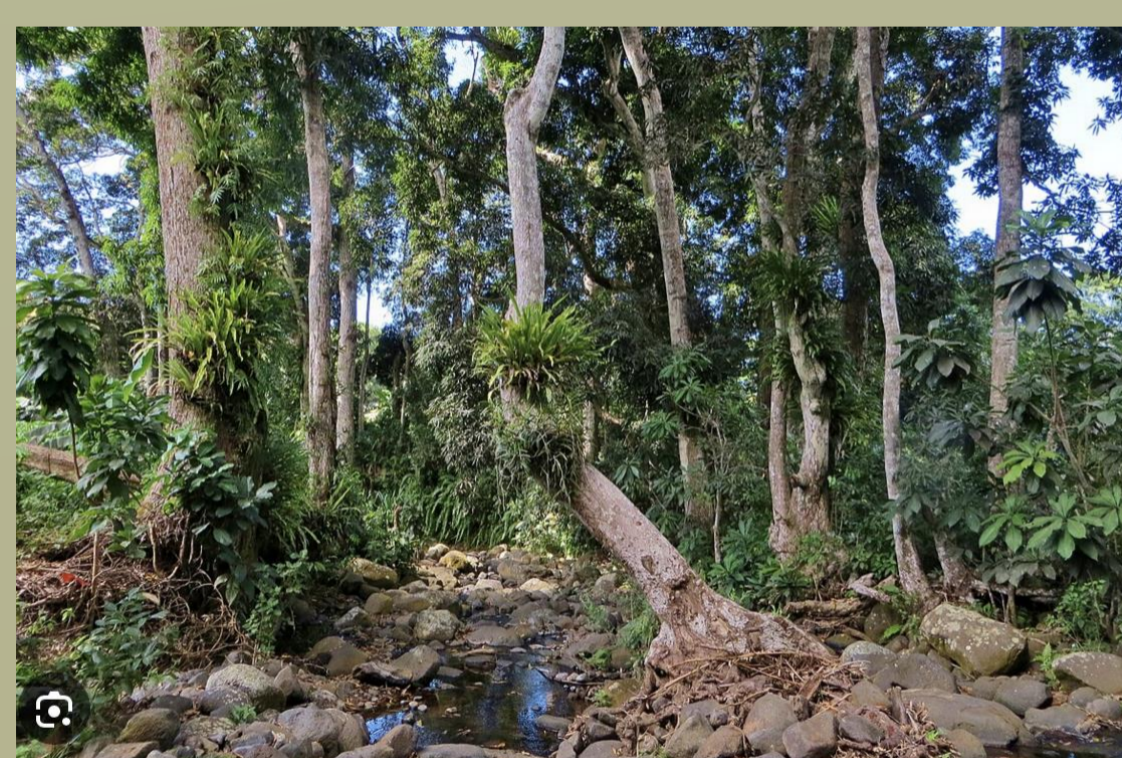
Protected habitats and humid area: destruction 1.47 ha



Mangrove Znief I: destruction of 0.27 ha



Back mangrove: destruction of 0.76 ha



Ripisylve : destruction of -0.04 ha



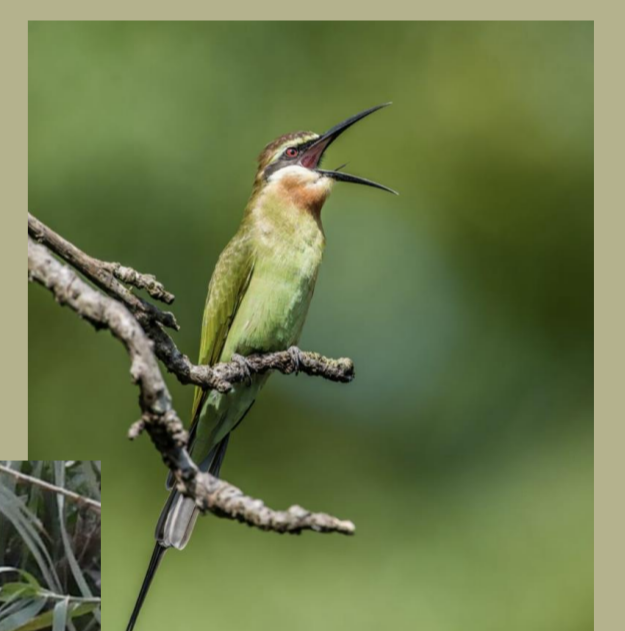
Agro-Forest : destruction of 0.4 ha

Species in danger

Many threatened species lose their habitat:



French sparrowhawk and little duke



Guepier



white crab-eater



Pheulma robertmertensi

And ...

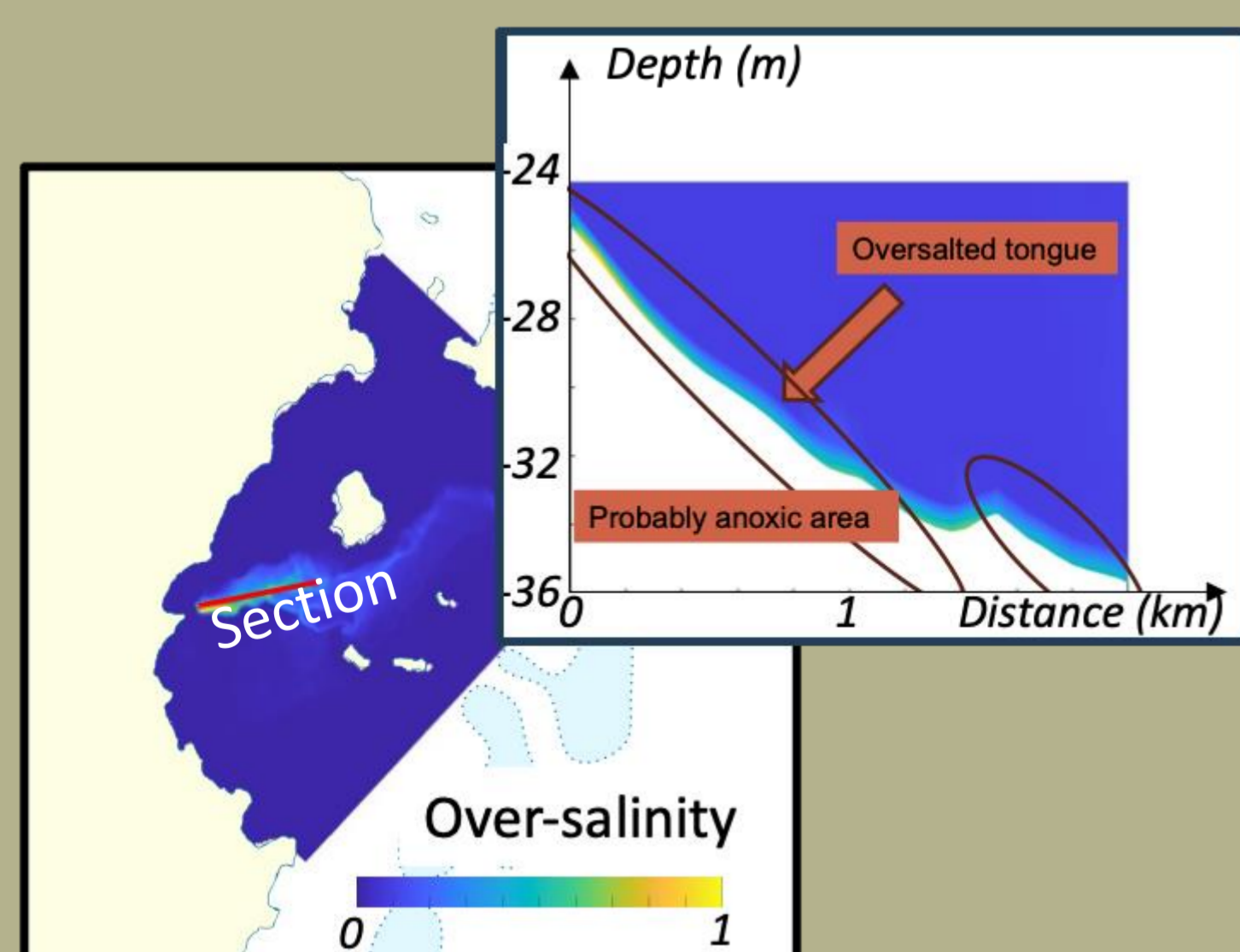
- 4 flying mammal species
- 5 reptil species
- 1 amphibian species
- 3 arthropodes species

13 Birds in danger:

- 3 raptors species: in danger
- 9 limnicol birds species
- 3 species of open area birds
- 13 species of forest breeding birds
- Comorien pigeon

Coastal impacts

Model of salt discharges



Desalination consequences

Construction factory will cause noise disturbances and numerous plumes of turbid waters in the marine ecosystem.

- ✓ The plant will discharge hypersaline water and other toxic products (antibacterial agents, antifoaming agents, flocculants...)

This oversalted discharge is heavier than marine waters and will spread along the bottom in the form of an oversalted tongue. The interface between the salt zone and this oversalted tongue is poorly permeable to nutrients and gases. This prevents oxygen from reaching the bottom, and prevents nutrients from the bottom from reaching the rest of the water column.

Destruction or endangerment of an emblematic habitat



Many endangered species disturbed



The plant filters a huge amount of lagoon marine water and destroys plankton, which plays a major role in the functioning of the coral ecosystem.

Marine impacts

Reference

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Conclusion

The urgent construction of a desalination plant is a **POLITICAL DECISION**, taken under social pressure from a thirsty population. Behind this decision lie different relationships to temporality in public affairs management: 1. the short term, or even the very short term, as a response to a civil emergency; 2. the long term, or even the very long term, of the construction and ecological dynamics of lagoon environments; 3. the role of science and the construction of knowledge in a case where the necessary multidisciplinary expertise comes up against the context of urgency and the difficulty of sharing conclusions with the general public.

The way in which the project has unfolded over the months illustrates the current difficulties for everyone in thinking together about: 1. the health and social emergency, 2. the response to climate and structural change in Mayotte.

The effects of this project require **MAJOR consideration** of the specific nature of the Mayotte's island social-ecological systems, which will be subject to very severe constraints in the future. Scientific monitoring is essential to track the impacts generated by this station.