



Unravelling coral reef fish biodiversity

G. Donati^{1,2}, C. Albouy^{1,2}, F. Leprieur³, and L. Pellissier^{1,2}

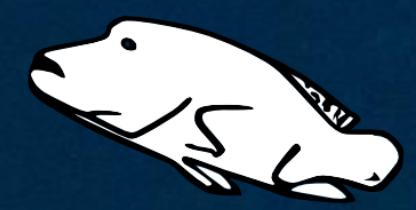
¹ETH Zurich, Institute of Terrestrial Ecosystems, Landscape Ecology Group, Zürich, Switzerland

²WSL Swiss Federal Institute for Forest, Snow and Landscape Research, Landscape Ecology Group, Zürich, Switzerland

³UMR MARBEC, (CNRS, IRD, IFREMER, UM), cc 093, Place E. Bataillon, FR-34095 Montpellier, France

Introduction

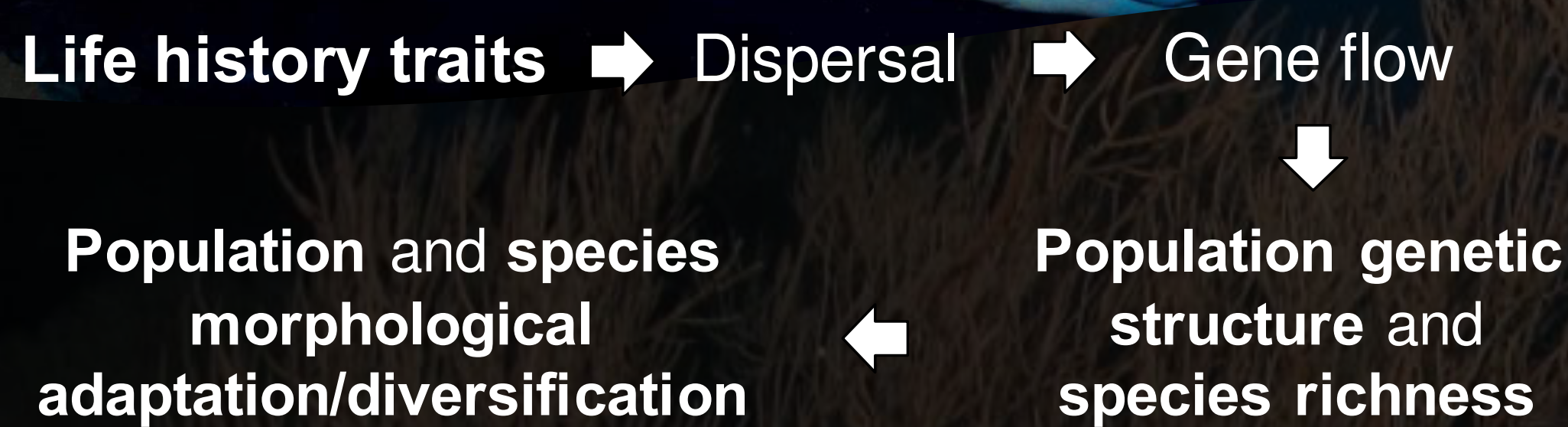
Despite occupying less than 0.1% of the world's ocean surface, coral reefs are **biodiversity hotspots** hosting over 25% of marine species worldwide and **providing invaluable services** to humankind. Nowadays, These precious ecosystems are **severely threatened** due to rapid anthropogenic climate change and overexploitation of natural resources. The limited understanding of the processes shaping and maintaining biodiversity in these ecosystems is restraining efficient conservation management.



ReeFISH

Through the combination of phylogenetic analyses, morphological measurements and population genetics, the ReeFISH project, aims at **understanding ecological and evolutionary processes shaping fish biodiversity in coral reefs**.

This is a prerequisite to assess the potential impacts of ongoing and future environmental changes on these taxa and to inform on best management practices of reef ecosystems for the future.



Methods: A highlight on innovation

We will use an **underwater stereo-camera system**, with extreme high definition video output, to collect **3D morphological measurements** of tropical reef fishes to understand **intra-specific variability** in hydro-dynamism associated to **local environmental conditions**.

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Mayotte reef zonation [online images]. Retrieved August 28, 2016, from <https://www.livingoceansfoundation.org/education/portal/course/reef-zonation/#reef-zones-ii>. Copyright © Michele Westmorland/ILCP.

Background Photos courtesy of A. Mohamed, A. D.H. Dhigurrah, Maldives. www.islanddivers.mv

Fieldwork: Happening NOW !

The 9th of September 2016, ReeFISH, starts its first expedition in **Mayotte** Island (Comoros Archipelago), an extremely diverse coral reef system for its multitude of reef and lagoon structures.

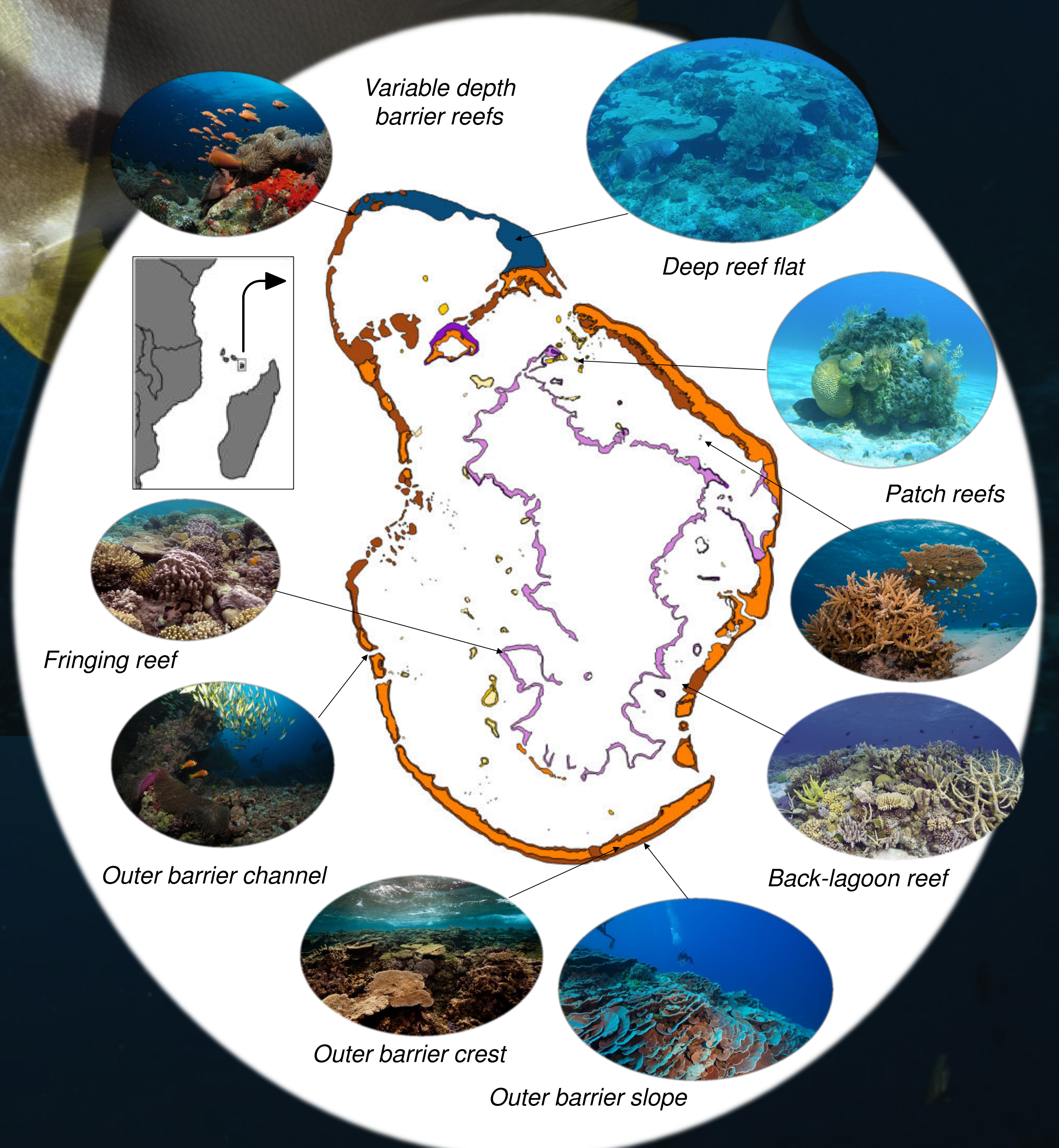


Figure 1: Mapping GIS product of the geomorphological reef structures of Mayotte Island (Androufouet et al. 2005).

In the following years, our expedition will be extended to other research sites in the Indian Ocean including Reunion, Seychelles, Maldives and the Red Sea.

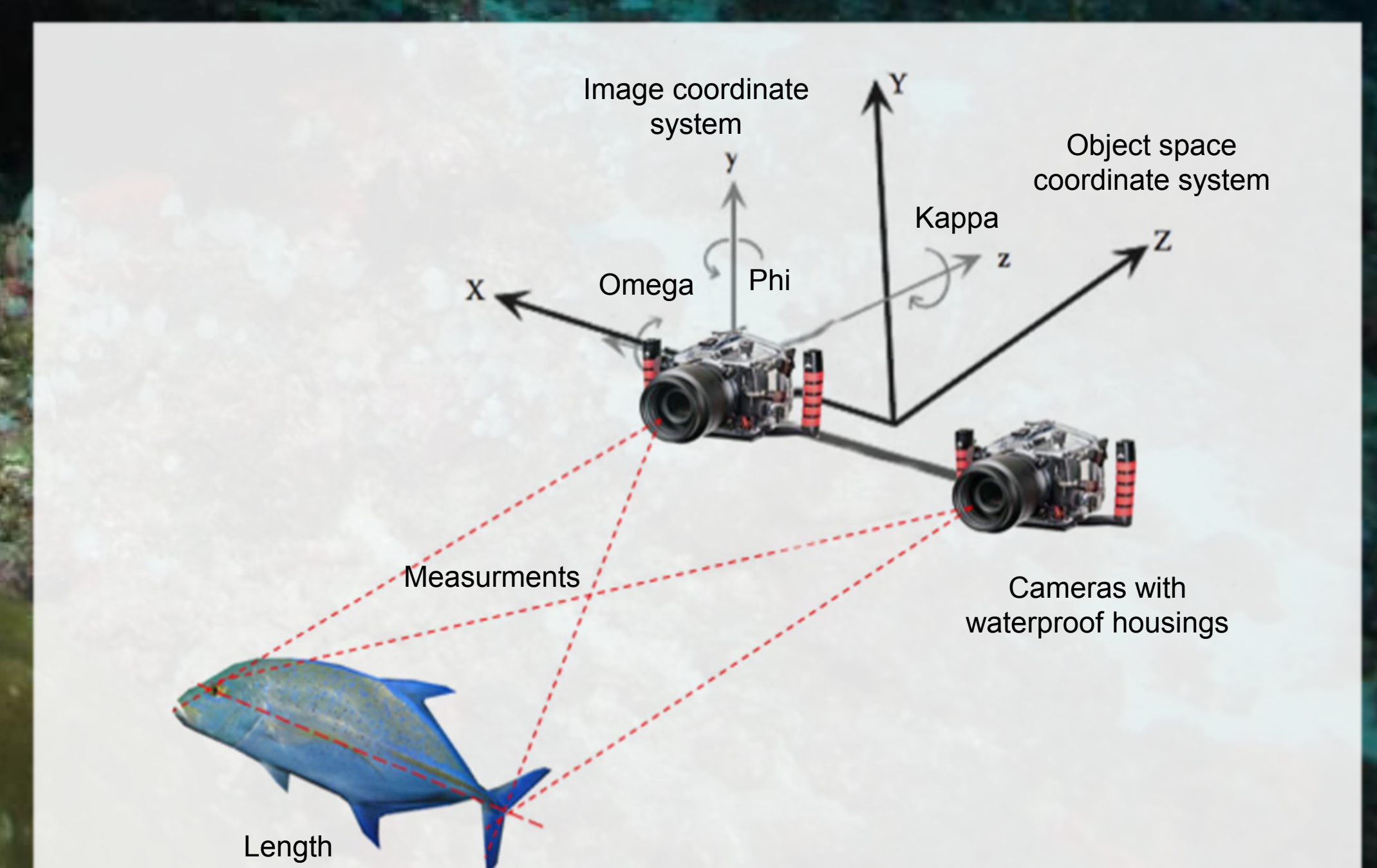
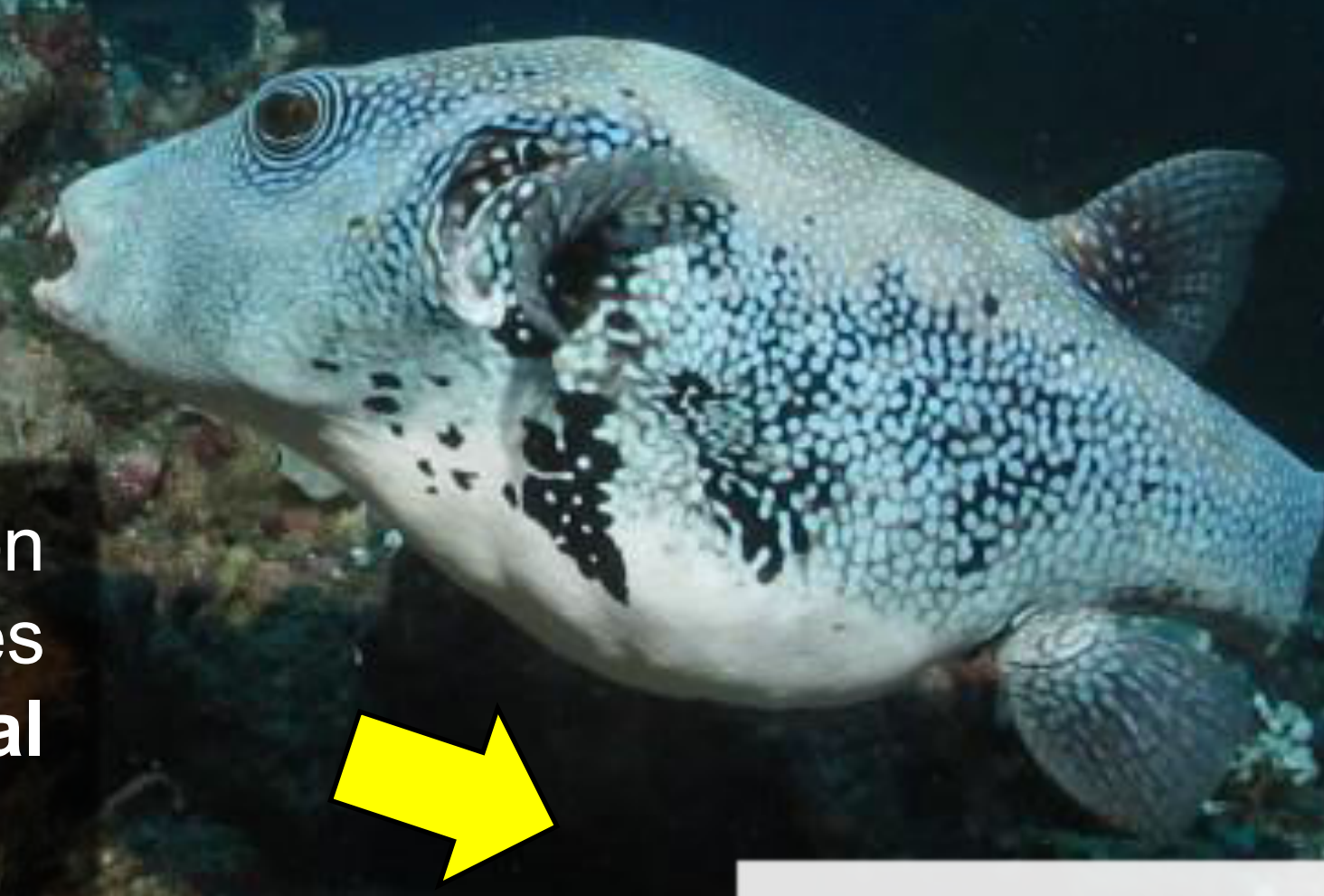


Figure 2: Schematic view of a stereo-camera system coordinate system and measurement of a length from 3D coordinates.