

## **Ocean currents or tectonic movement: Which is responsible for the distribution of the coelacanth *Latimeria chalumnae* in the South Western Indian Ocean?**

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The strong South Equatorial Current divides to flow southwards as the Mozambique Current and northwards as the East African Current. It has been suggested that these currents have washed coelacanths from the Comoros onto the African Coast and to Madagascar, and that all discoveries of coelacanths in these areas are strays from the Comoros. This hypothesis is questioned.

The hypothesis is based upon the assumption that the currents are sufficiently strong and persistent to be able to carry coelacanths from their “home” in the Comoros to these new destinations. The classical understanding of the Mozambique current is that it is a substantial western boundary shelf edge flow. Some data from ship drift and ship borne ADCPs do show a southerly flow, providing support for this contention. However, Sætra and da Silva (1982) gathered CTD data which led them to postulate that the Mozambique Current flows through the channel as large anti-cyclonic eddies. Independent support for their postulate comes from data derived from an array of current meter moorings deployed over 12 months across the northern entrance of the Mozambique Channel (2001-2002); these data indicate that the southward flow is achieved by a series of anti-cyclonic eddies, and not by a continuous southward flow along the Mozambique continental shelf. Data from a satellite drifter (deep set drogue) released in July 2003 in the northern part of the Mozambique Channel also shows huge eddies. It appears therefore that the strong boundary current, purported to carry coelacanths southwards might not exist. Further research is planned to verify the behaviour of the current. Behavioural data indicate that adult coelacanths are demersal, living within the boundary layer over the ocean floor in which currents are absent or so weak that they are unlikely to wash coelacanths away from their provenance.

Coelacanths appear to be philopatric and have homing behaviour that keeps them within their home ranges. It is unlikely, therefore, that adult coelacanths would be unwittingly washed away. Behaviour, ecology and distribution of juvenile coelacanths are totally unknown.

There is sufficient evidence to cast doubts on the hypothesis that coelacanths are washed from the Comoros as strays. An alternative hypothesis is that the distribution of coelacanths in the South West Indian Ocean resulted from tectonic movement and the separation of Madagascar from Africa. It is also necessary to question whether the Comoros are the home of coelacanths, given that the origin of these islands is so recent. An ancestral continental home for *Latimeria chalumnae* might be more likely.