federal and territorial waters. From March July 2009 we used visual censuses, hook and line catches and fisher interviews to validate the seasonal occurrence of mutton snapper spawning aggregation(s) within the Mutton Snapper Seasonal Area Closure (MSSAC). Fishing was performed two to three nights each month from three days before to five nights after the full moon. Of the 95 fish caught 65 were males and 30 females. Visual censuses on scuba were undertaken at dusk within the MSSAC, however, zero to a maximum of two fish were detected on each dive and no aggregation of *L. analis* was observed either in the water column or near the substrate. The peak spawning occurred in May and June. The largest female had a FL 65.3 cm, weighed 5.85 kg with a GSI of 4.0. The largest male had a FL 66.0 cm, weighing 5.73 kg with a GSI of 2.1.

15:28 **Landings, effort and economic patterns in the small-scale directed *Loligo forbesii* fishery in the Moray Firth (NE Scotland): a case study using fisher's knowledge and fishery statistics**

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The present paper reviews the recent history of the directed squid fishery in the Moray Firth, Scotland (UK), including the sharp decline in landings during the 2006 fishing season. This is a small, inshore fishery, in which many vessels are owned and operated by a single fisher, with three months of seasonal *Loligo* catch profits comprising more than 50% of their annual gross income. Face-to-face interviews with vessel owners who participate in the fishery were conducted in the ports of Burghead, Buckie, Lossiemouth, Macduff and Fraserburgh during 2007 and 2009. The resulting study uses both fishers' knowledge and government fisheries statistics to identify the importance of the *Loligo* fishery in the Moray Firth as a resource in terms of (a) landings and (b) revenue, as well as (c) assess the changes in input pressure (effort) and output (catch) over the past decade. We also attempt to increase the knowledge of potential spawning ground locations, environmental conditions perceived to be related to favorable catch per unit effort, and fishers' opinions towards regulation. It is hoped that suggestions for management produced by these stakeholders, when considered together with biological data such as life history models stemming from growth and maturation relationships, could provide the basis for a successful cephalopod stock management regime in this niche-market fishery, which is vulnerable to both socio-economic and biological collapse.

15:35 **Individual (one-on-one) Q&A period**

15:40 **Acceptability and adaptability of the fishermen communities to the Marine Protected Areas in South West Madagascar**

Jamal Mahafina, L. Ranaivomanana, and C. Ralijaona, *Université de Toliara, Madagascar;* **P. Chabanet, and J. Ferraris**, *IRD, France*

In response to a sustainable development of coastal ecosystems, the implementation of management measures with Marine Protected Areas (MPAs) is generalized along Malagasy coastline. However, the effectiveness of MPAs is confronted with several problems related to understanding the role and the uses of the concerned actors, particularly the fishermen communities because of the fishing prohibition. The study of the impacts of temporary marine reserves and the feasibility of a fishing alternative method (Post-larval Captures and Culture, PCC) were initiated in the Toliara area (South West Madagascar) in order to analyse the conservation and the increasing value of biodiversity and to encourage a participatory management. An experiment of post-larvae captures has been conducted with some fishermen from December 2008 to February 2009, complemented by interviews in two fishermen villages (Sarodrano, Ifaty) to analyze the social acceptability of the PCC as well as marine reserves. At the same time, a monitoring of the catches, sales and the sea food consumption (fish, cephalopods) was conducted with the wives of fishermen. The objective of the study was to understand the fishing behaviours in relation to management measures and to compare them with the perceptions revealed in the interviews: 53 fishermen were interviewed; and around 4000 fishing trips were recorded from October 2009 to April 2010. The results show (i) a potential of the area in post-larvae, which could be proposed as a resource for generating an alternative activity to environmental overexploitation, via aquaculture, ornamentals and restocking environments; and (ii) illustrate the variability in perceptions and the adaptive behaviours to the temporary closure of fishing areas.

Mahafina J., Ranaivomanana L., Ralijaona C., Chabanet Pascale, Ferraris Jocelyne (2010)

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