



11th Annual Meeting of the Scientific Committee (SC11)

Fremantle, Australia, 23-31 March 2026

SC-11-49

Biological Research on the squid in the Indian Ocean

Delegation of China

Document type	Working paper <input checked="" type="checkbox"/> Information paper <input type="checkbox"/>
Distribution	Public <input checked="" type="checkbox"/> Restricted ¹ <input type="checkbox"/> Closed session document ² <input type="checkbox"/>
Abstract	<p>This working paper focuses on <i>Sthenoteuthis oualaniensis</i> in the northwestern Indian Ocean. Since China implemented the 2022 seasonal closure there, analysis of 2184 samples show females' and males' mantle length and first sexual maturity mantle length increased, with delayed maturity. The closure protects squid growth. Future studies will cover otoliths and stock assessment, to be shared at SIOFA meetings.</p>

¹ Restricted documents may contain confidential information. Please do not distribute restricted documents in any form without the explicit permission of the SIOFA Secretariat and the data owner(s)/provider(s).

² Documents available only to members invited to closed sessions.

Recommendations

- to introduce the biological research on the squid, especially *Sthenoteuthis oualaniensis*, in the Indian Ocean
- to confirm that we are now doing more research and will share the result later

Biological Research on the squid in the Indian Ocean

Introduction

As one of the biggest squid capture countries in the world, China catches different species of squid over the world, mainly including *Ommastrephes bartramii* in north Pacific, *Dosidicus gigas* in southeast Pacific and *Sthenoteuthis oualaniensis* in northwest Indian Ocean.

The squid catch history regarding China in Indian Ocean began in the early 21st century, both in and beyond SIOFA area. We often use squid jigging and light seining. The main target species in Indian ocean is *S.oualaniensis* which often is named as purpleback squid, and the bycatch species is *Thysanoteuthis rhombus* (diamondback squid).

In 2022, China began to put into effect on seasonal closure in the high seas in the northwest Indian Ocean. All Chinese offshore fishing vessels operating in the corresponding areas of the high seas must cease operations from July to September every year, which want to promote the sustainability of the fisheries.

We sampled some *S.oualaniensis* during the capture in the Indian Ocean and observed their biological information for the further research. The information in detail is as below:

We total caught 2184 individuals during these years, including 2162 *S.oualaniensis* and 22 *T.rhombus*. The mantle length of *S.oualaniensis* ranges from 13mm to 725mm. The body weight of them ranges from 6.1g to 4696g. And the sexual ratio is 1:0.76 (male:female).

Analysis of Mantle Length Before and After the seasonal closure

Based on the analysis of biological sampling data of *S.oualaniensis* in the high seas of the northern Indian Ocean from 2021 to 2025, the overall mantle length distribution of female and male *S.oualaniensis* showed an increasing trend after the implementation of seasonal closure in the high seas. For female *S.oualaniensis*, the dominant mantle length group was 100-150 mm before the closure and shifted to 200–250 mm after the closure. The average mantle length of female *S.oualaniensis* in the northern Indian Ocean rose significantly from 159 mm before the closure to 196 mm after the closure. For male *S.oualaniensis*, the dominant mantle length group was 100–150 mm before the closure and changed to 150–200 mm after the closure, with the average mantle length increasing from 146 mm before the closure to 160 mm after the closure. In terms of basic biology, the implementation of seasonal closure in the high seas of the northern Indian Ocean has exerted a corresponding protective effect on the growth of *S.oualaniensis* in this sea area.

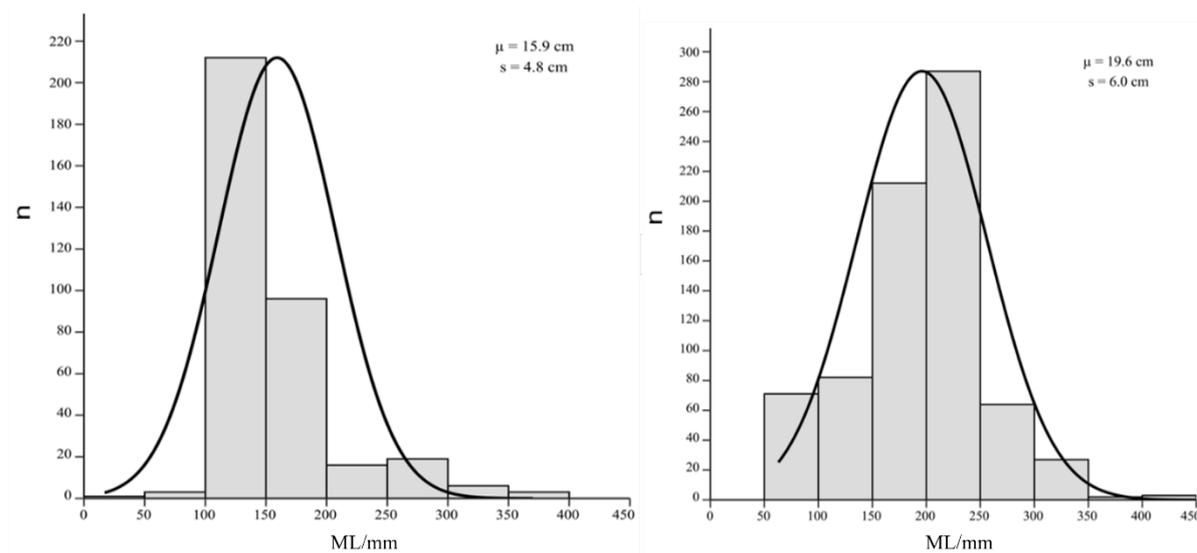


Fig.1 Mantle length structure of female *Sthenoteuthis oualaniensis* in the northern Indian Ocean high seas before and after the seasonal closure (Left: Pre-closure; Right: Post-closure)

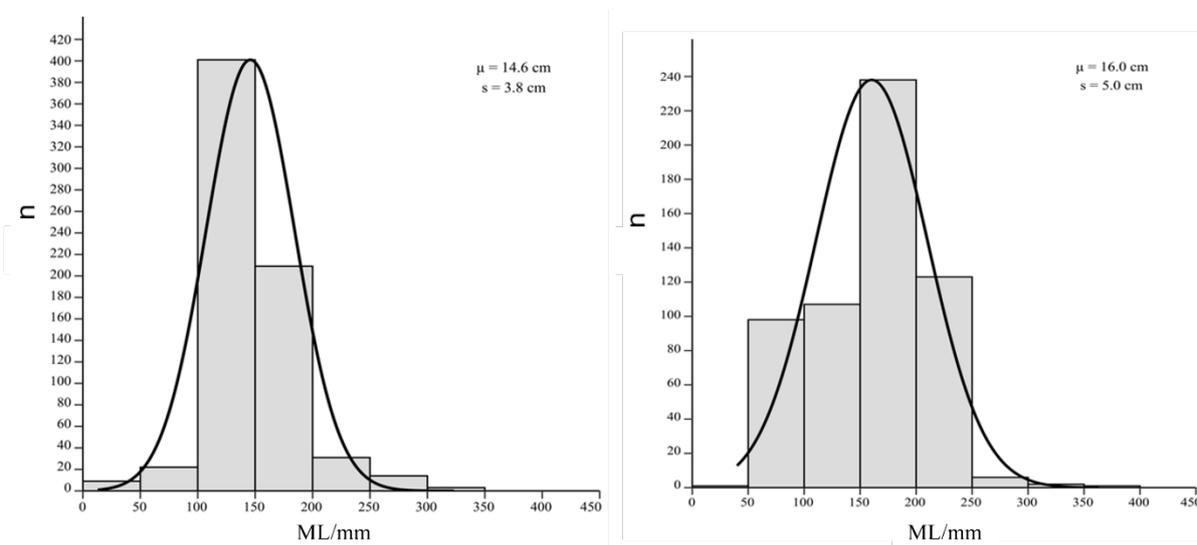


Fig.2 Mantle length structure of male *Sthenoteuthis oualaniensis* in the northern Indian Ocean high seas before and after the seasonal closure (Left: Pre-closure; Right: Post-closure)

Analysis of Trunk Length at First Sexual Maturity Before and After the seasonal closure

Based on the analysis of data on mantle length and sexual maturity of female and male *S.oualaniensis* in the northern Indian Ocean before and after the seasonal closure, the mantle length at first sexual maturity of both female and male individuals in the high seas of the northern Indian Ocean increased after the implementation of seasonal closure in the high seas. The mantle length at first sexual maturity of female *S.oualaniensis* rose from 226.28 mm before the closure to 265.58 mm after the closure, with an increase of 39.3 mm. For male *S.oualaniensis*, the mantle length at first sexual maturity increased markedly from 237.63 mm before the closure to 333.45 mm after the closure, a rise of 95.82 mm. In general, the implementation in the high seas of the northern Indian Ocean has led to the phenomenon of delayed sexual maturity in *S.oualaniensis* in this sea area.

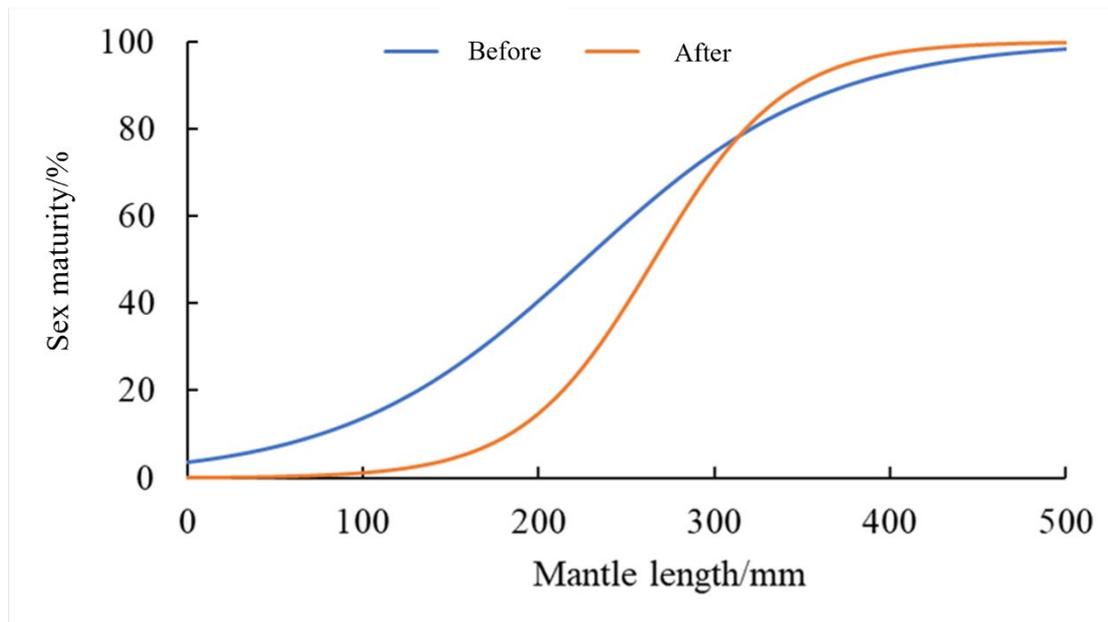


Fig.3 Mantle length at first sexual maturity of female *Sthenoteuthis oualaniensis* before and after the seasonal closure

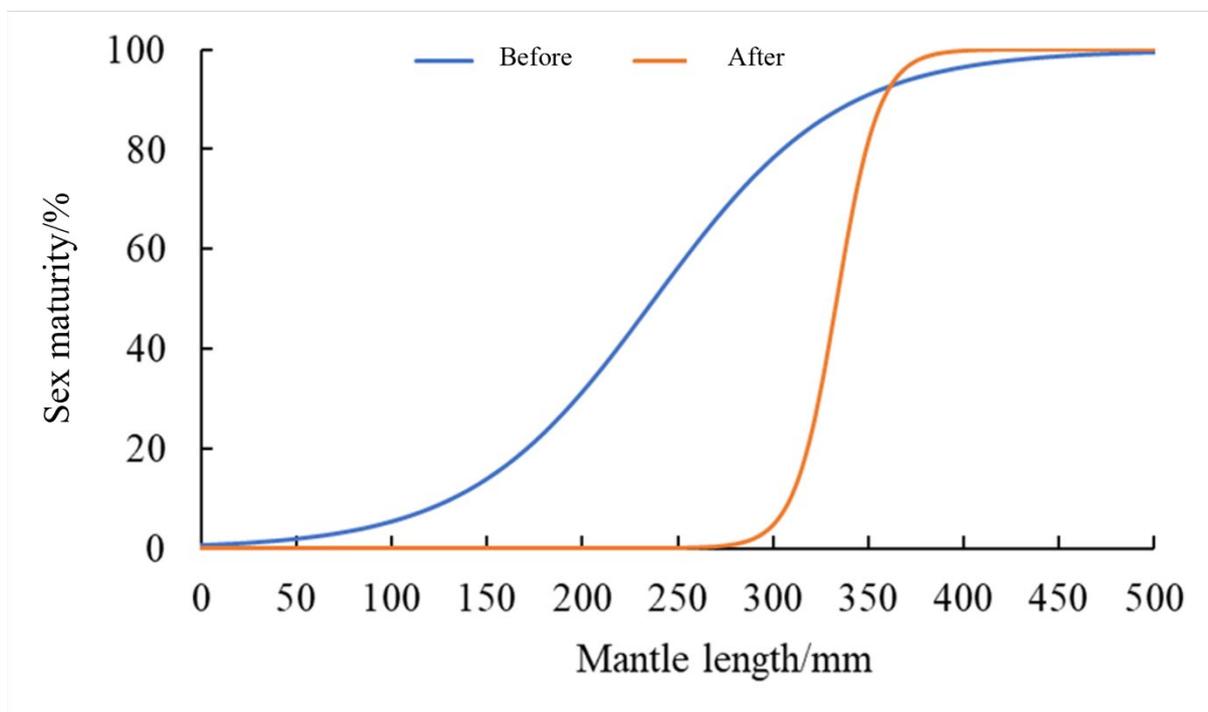


Fig.4 Mantle length at first sexual maturity of male *Sthenoteuthis oualaniensis* before and after the seasonal closure

Finally, we will collect more data for the squid in the Indian Ocean and do more research regarding on the otolith, stock assessment and so on. And hope to share with them in the future SIOFA meeting.