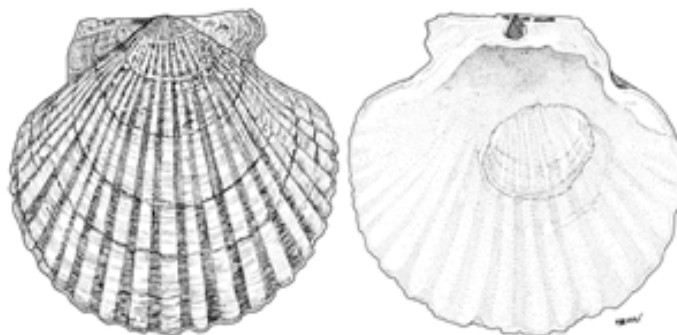


## MSC SUSTAINABLE FISHERIES CERTIFICATION

### Off-Site Surveillance Visit - Report for Zhangzidao Scallop Fishery



2<sup>nd</sup> Surveillance Audit

June 2017

Certificate Code	F-ACO-0069
Prepared For:	<b>Zoneco Group</b>
Prepared By:	<b>Acoura Marine</b>
Authors:	Paul Knapman, Julian Addison, Allen Li

## Assessment Data Sheet

Fishery name	Zhangzidao Scallop		
Species and Stock	North Yellow Sea Yesso Scallop ( <i>Patinopecten yessoensis</i> )		
Date certified	22 <sup>nd</sup> April 2015	Date of expiry	21 <sup>st</sup> April 2020
Surveillance level and type	Level 4 – Off-site		
Date of surveillance audit	10 April 2017		
Surveillance stage (tick one)	1st Surveillance		
	2nd Surveillance	✓	
	3rd Surveillance		
	4th Surveillance		
	Other (expedited etc)		
Surveillance team	Lead auditor: Paul Knapman Auditor: Julian Addison Local expert, translator and facilitator: Allen Li		
Conformity Assessment Body (CAB) name	Acoura Marine		
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# Contents

<b>1</b>	<b>Introduction .....</b>	<b>4</b>
1.1	Scope of Surveillance .....	4
1.2	Aims of the Surveillance.....	5
1.3	Certificate Holder Details .....	5
<b>2</b>	<b>Surveillance Process .....</b>	<b>6</b>
2.1	Findings of the original assessment.....	6
2.2	Surveillance Activity .....	6
2.2.1	Surveillance team details .....	6
2.2.2	Date & Location of surveillance audit.....	7
2.2.3	Stakeholder consultation & meetings.....	7
2.2.4	What was inspected .....	7
2.2.5	Stakeholder Consultation .....	7
2.3	Surveillance Standards .....	8
2.3.1	MSC Standards, Requirements and Guidance used .....	8
2.3.2	Confirmation that destructive fishing practices or controversial unilateral exemptions have not been introduced.....	8
<b>3</b>	<b>Updated Fishery Background .....</b>	<b>9</b>
3.1	Changes in the management system .....	11
3.2	Changes in relevant regulations.....	12
3.3	Changes to personnel involved in science, management or industry.....	12
3.4	Changes to scientific base of information including stock assessments .....	12
3.5	Changes and updates on Ecosystem issues .....	12
3.6	Updates on enhanced fishery's position in relation to scope criteria .....	12
3.7	Any developments or changes within the fishery which impact traceability or the ability to segregate between fish from the Unit of Certification (UoC) and fish from outside the UoC (non-certified fish).....	15
3.8	TAC and catch data .....	15
3.9	Summary of Assessment Conditions .....	16
<b>4</b>	<b>Results .....</b>	<b>17</b>
4.1	Condition 1 (UoCs 1, 2, 3, 4).....	17
4.2	Condition 2 (UoCs 1, 2, 3, 4).....	18
4.3	Recommendations .....	20

Recommendation 1. The audit team recommended that the client uses occasional independent observers to monitor the non-target species in the catch and make comparisons with data recorded by the captains. The observer programme should consider collecting additional data, e.g. non-target species size and weight, which would help contribute to the overall environmental monitoring being undertaken by the client. Such information will contribute to and support the re-assessment of the fishery..... 20

In response to this recommendation, since the last surveillance audit the Client has contracted the Environmental Monitoring Centre that carries out the monthly sampling of scallops and water quality, to also undertake monthly sampling of the bycatch. In addition, the Client has also used vessel captains to participate in fishing trips of other vessels and monitor the bycatch sampling protocol

undertaken on these other vessels. The Client has therefore made significant progress in relation to this recommendation. .... 20

## **5 Conclusion ..... 21**

5.1 Summary of findings ..... 21

## **6 References ..... 21**

Acoura, 2016. Report of the 1<sup>st</sup> Surveillance Audit for the Zhangzidao Scallop Fishery. .... 21

Intertek 2015, Public Certification Report, Zhangzidao Scallop Fishery [https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/pacific/zhangzidao-scallop/assessment-downloads-1/20150413\\_PCR\\_SCA326.pdf](https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/pacific/zhangzidao-scallop/assessment-downloads-1/20150413_PCR_SCA326.pdf) ..... 21

MSC Certification Requirements Version 1.3 <https://www.msc.org/documents/scheme-documents/fisheries-certification-scheme-documents/msc-scheme-requirements/msc-certification-requirements> ..... 21

MSC Fisheries Certification and Guidance Version 2.0 <https://www.msc.org/documents/scheme-documents/fisheries-certification-scheme-documents/fisheries-certification-requirements-version-2.0> ..... 21

Appendix 1 – Re-scoring evaluation tables..... 22

Appendix 2 - Stakeholder submissions..... 23

Appendix 3 - Surveillance audit information..... 24

N/A ..... 24

Appendix 4 - Additional detail on conditions/ actions/ results ..... 25

Appendix 5 - Revised Surveillance Program ..... 31

# 1 Introduction

## 1.1 Scope of Surveillance

This report outlines the findings of the 2<sup>nd</sup> Annual Surveillance of the Zhangzidao Scallop fishery. The scope of the certified fishery and therefore of this surveillance is specified in the Units of Certification (UoC) set out below:

### UoC 1

Species:	Yesso scallop ( <i>Patinopecten yessoensis</i> )
Geographical area:	North Yellow Sea
Method of capture:	Wild spat collection using suspended ropes and on-grown in pearl nets (catch and grow)
Stock:	North Yellow Sea yesso scallop
Management System:	Zoneco Group Co., Ltd. Dalian Ocean and Fishery Bureau State Oceanic Bureau, Dalian Ocean Environment Monitoring Centre
Client Group:	Zoneco Group Co., Ltd.

### UoC 2

Species:	Yesso scallop ( <i>Patinopecten yessoensis</i> )
Geographical area:	North Yellow Sea
Method of capture:	Hatchery reared spat on-grown in pearl nets (hatch and catch)
Stock:	North Yellow Sea yesso scallop
Management System:	Zoneco Group Co., Ltd. Dalian Ocean and Fishery Bureau State Oceanic Bureau, Dalian Ocean Environment Monitoring Centre
Client Group:	Zoneco Group Co., Ltd.

### UoC 3

Species:	Yesso scallop ( <i>Patinopecten yessoensis</i> )
Geographical area:	North Yellow Sea
Method of capture:	Harvesting of adults using diving
Stock:	North Yellow Sea yesso scallop
Management System:	Zoneco Group Co., Ltd. Dalian Ocean and Fishery Bureau State Oceanic Bureau, Dalian Ocean Environment Monitoring Centre
Client Group:	Zoneco Group Co., Ltd.

### UoC 4

Species:	Yesso scallop ( <i>Patinopecten yessoensis</i> )
Geographical area:	North Yellow Sea
Method of capture:	Harvesting of adults using dredging
Stock:	North Yellow Sea yesso scallop
Management System:	Zoneco Group Co., Ltd. Dalian Ocean and Fishery Bureau State Oceanic Bureau, Dalian Ocean Environment Monitoring Centre
Client Group:	Zoneco Group Co., Ltd.

## 1.2 Aims of the Surveillance

The purpose of the annual Surveillance Report is fourfold:

1. to establish and report on whether or not there have been any material changes to the circumstances and practices affecting the original complying assessment of the fishery;
2. to monitor the progress made to improve those practices that have been scored as below “good practice” (a score of 80 or above) but above “minimum acceptable practice” (a score of 60 or above) – as captured in any “conditions” raised and described in the Public Report and in the corresponding Action Plan drawn up by the client;
3. to monitor any actions taken in response to any (non-binding) “recommendations” made in the Public Report;
4. to re-score any Performance Indicators (PIs) where practice or circumstances have materially changed during the intervening year, focusing on those PIs that form the basis of any “conditions” raised.

**Please note:** The primary focus of this surveillance audit is to assess changes made in the previous year. For a complete picture, this report should be read in conjunction with the Public Certification Report for this fishery assessment which can be found here:

<https://fisheries.msc.org/en/fisheries/zhangzidao-scallop/@@assessments>

## 1.3 Certificate Holder Details

In 2014, the company changed its name from Zhangzidao to Zoneco Group Co., Ltd. The group was established in 1958, and was one of the first fishery companies in China to establish the “sea resources development model”, which promotes fisheries enhancement using an ecological and scientifically based model.

The Company attaches great importance to quality control systems and has established a quality assurance and tracing system for the whole process of propagation, cultivation, processing, purification and distribution, resulting in the Company's achievement of the ISO 9001 Quality System Certification, the US FDA Certification on HACCP and MSC Certification in 2015. In addition, all the major products pass the Organic Food Certification standard.

To support its fisheries program the Company has established strategic links with the Chinese Academy of Fishery Sciences, the Marine Institute of Chinese Academy of Sciences, the Dalian Institute of Fisheries, the Ocean University of China, the Dalian Institute of Light Industry, and the Marine and Fisheries Research Institute of Liaoning Province.

## 2 Surveillance Process

### 2.1 Findings of the original assessment

As a result of the assessment, two conditions of certification were raised by the assessment team, and maintenance of the MSC certificate is contingent on the Zhangzidao Scallop fishery moving to comply with these conditions within the time-scales set at the time the certificate was issued. In addition, two recommendations were made at the 1<sup>st</sup> surveillance audit which, whilst not obligatory, the client is encouraged to act upon within the spirit of the certification.

### 2.2 Surveillance Activity

#### 2.2.1 Surveillance team details

This off-site surveillance visit was carried out by Paul Knapman, Julian Addison and Allen Li. The Team Leader was Paul Knapman.

##### **Paul Knapman (TL & P3)**

Paul is an independent consultant based in Halifax, Nova Scotia, Canada. Paul began his career in fisheries nearly 30 years ago as a fisheries officer in the UK, responsible for the enforcement of UK and EU fisheries regulations. He then worked with the UK government's nature conservation advisors (1993-2001), as their Fisheries Programme Manager, responsible for establishing and developing an extensive programme of work with fisheries managers, scientists, the fishing industry and ENGOs, researching the effects of fishing and integrating nature conservation requirements into national and European fisheries policy and legislation.

Between 2001-2004 he was Head of the largest inshore fisheries management organisation in England, with responsibility for managing an extensive area of inshore fisheries on the North Sea coast. The organisations responsibilities and roles included: stock assessments; setting and ensuring compliance with allowable catches; developing and applying regional fisheries regulations; the development and implementation of fisheries management plans; acting as the lead authority for the largest marine protected area in England.

In 2004, Paul moved to Canada and established his own consultancy providing analysis, advisory and developmental work on fisheries management policy in Canada and Europe. He helped draft the management plan for one of Canada's first marine protected areas, undertook an extensive review on IUU fishing in the Baltic Sea and was appointed as rapporteur to the European Commission's Baltic Sea Regional Advisory Council.

In 2008, Paul joined Moody Marine as their Americas Regional Manager, with responsibility for managing and developing their regional MSC business. He became General Manager of the business in 2012. Paul has been involved as a lead assessor, team member and technical advisor/reviewer for more than 50 different fisheries in the MSC programme. He returned to fisheries consultancy in 2015.

##### **Julian Addison (P1/2)**

Dr Julian Addison is an independent fisheries consultant with 30 years' experience of stock assessment and provision of management advice on shellfish fisheries, and a background of scientific research on shellfish biology and population dynamics and inshore fisheries. Until December 2010 he worked at the Centre for Environment, Fisheries and Aquaculture Science (Cefas) in Lowestoft, England where he was Senior Shellfish Advisor to Government policy makers, which involved working closely with marine managers, legislators and stakeholders, Government Statutory Nature Conservation Organisations and environmental NGOs. He has experienced shellfish management approaches in North America as a visiting scientist at DFO in Halifax, Nova Scotia and at NMFS in Woods Hole, Massachusetts. For four years he was a member of the Scientific Committee and the UK delegation to the International Whaling Commission providing scientific advice to the UK Commissioner. He has worked extensively with ICES and was Chair of the Working Group on the Biology and Life History of Crabs, a member of the Working Group on Crangon Fisheries and Life History and a member of the Steering Group on Ecosystems Function. He has undertaken MSC full assessments for the Newfoundland and Labrador snow crab fishery, the Ireland and Northern Ireland bottom grown mussel fisheries, both the Estonia and Faroe Islands Barents Sea cold water prawn fisheries, the Nephrops fishery in the Skagerrak and Kattegat, the Swedish, Danish and Norwegian shrimp fisheries in the

Skagerrak and Norwegian Deep, the Eastern Canada offshore lobster fishery, Limfjord mussels and cockles, Chilean crustaceans, North Sea brown shrimp, Inner Danish Waters mussels, Shetland inshore shellfish and Canadian Arctic surf clams. He has also undertaken various MSC pre-assessments and surveillance audits and has carried out peer reviews of MSC assessments worldwide of lobster, cold water prawn, razorfish, cockle, scallop, mussel, oyster and slipper limpet fisheries. Other recent work includes a review of the stock assessment model for blue crabs in Chesapeake Bay, USA, and an assessment of three Alaskan crab fisheries under the FAO-based Responsible Fisheries Management scheme.

#### **Allen Li (Local expert, translator, facilitator)**

Allen Li was a member of the original assessment team. He works for Intertek as one of their key auditors for BRC food, MSC CoC, GlobalG.A.P. and GMP Plus. He has extensive work experience and high level audit skills having done more than 100 BRC food, MSC CoC, GlobalG.A.P. and GMP Plus audits during past four years. He has a Masters Degree in Processing and Storage of Aquatic Products from Ocean University of China and has been involved in the trial audits of Tilapia Aquaculture Dialogue and GlobalG.A.P. Aquaculture. He was also involved in the MSC investigation of Chinese crayfish handled by Heiploeg in 2009, acting as translator and coordinator between the crayfish fishery and assessors and stakeholders.

### **2.2.2 Date & Location of surveillance audit**

The 2<sup>nd</sup> surveillance audit was conducted off-site on 10 April 2017.

### **2.2.3 Stakeholder consultation & meetings**

A Skype meeting was held between the audit team and representatives of the Client Group, Zoneco Group Co., Ltd. Table 2.1 lists the individuals who participated in the Skype meeting.

Table 2.1 Participants in 2<sup>nd</sup> Annual Surveillance Audit of the Zhangzidao Scallop Fishery.

<b>Name</b>	<b>Organisation</b>	<b>Role</b>
Paul Knapman	Acoura Marine Audit Team	Team Leader, P3 Expert
Julian Addison	Acoura Marine Audit Team	P1 & P2 Expert
Allen Xi	Intertek	Local expert, translator, facilitator
Mr. Xuewei ZHAO	Zoneco Group Co., Ltd.	Assistant Director of Marine Biology R&D Center
Mr. Jingjiang SHI	Zoneco Group Co., Ltd.	Manager of Production Technology Department
Mrs. Yuan ZHANG	Zoneco Group Co., Ltd.	Manager of Marine Biology R&D Department
Mrs. Yun WANG	Zoneco Group Co., Ltd.	Director of General Office

### **2.2.4 What was inspected**

The Client Group, Zoneco Group Co., Ltd., provided the most recent landings data for the 4 UoCs, a summary of current research projects being carried out in conjunction with research institutes in China (see Appendix 4), and information in relation to the outstanding condition and the recommendation raised at the 1<sup>st</sup> surveillance audit in 2016.

### **2.2.5 Stakeholder Consultation**

A total of 6 stakeholder organisations and individuals having relevant interest in the assessment were identified and consulted during this surveillance audit. The interest of others not appearing on this list was solicited through the postings on the MSC website.



## **2.3 Surveillance Standards**

### **2.3.1 MSC Standards, Requirements and Guidance used**

This surveillance audit was carried out according to the MSC Fisheries Certification Requirements FAM 1.3 using process v2.0.

### **2.3.2 Confirmation that destructive fishing practices or controversial unilateral exemptions have not been introduced**

No indication was given or suggested during the surveillance audit to suggest that destructive fishing practices or controversial unilateral exemptions have been introduced within this fishery.

### 3 Updated Fishery Background

The Yesso or Japanese scallop (*Patinopecten yessoensis*) was first introduced to the Yellow Sea in 1982. While considered an introduced species it is within scope for MSC certification as it meets requirements set out in Annex CJ of the MSC Certification Requirements (CR) v1.3.

The fishery is also considered to be an enhanced fishery, in accordance with Section 27.4.12 of the CR v1.3, as it includes wild spat collection, hatchery operations and seabed farming, with harvesting being undertaken by divers or vessels using dredges.

The location of the fishery, including spat collecting area, is shown in Figures 3.1 to 3.4 below. An exclusive area of approximately 200,000 hectares has been established around Zhangzidao Island for the fishery (see Figure 3.2).

**UoC 1 - Catch and grow (CAG)** – Adult scallop around Zhangzidao Island spawn between April and May. A prevailing current carries the fertilized scallop larvae eastward. Approximately 90 miles east from Zhangzidao Island, along the coast at Lvshun (Figures 3.3 and 3.4), scallop spat collectors are hung from anchored rafts. The collectors are composed of polypropylene pearl nets with different mesh sizes and provide ideal substrate on which the larval spat settle. After 3 - 4 months, the spat have grown to approximately 5 - 10 mm shell width. At this point they are sorted and transported in seawater tanks on board barges to Zhangzidao Island for further on-growing in pearl nets suspended from anchored and buoyed ropes. After a further 4 - 6 months, the scallops have grown to 30 - 50 mm shell width and are ready for sowing on the seabed within designated areas around Zhangzidao Island. The scallops are put in hoppers on barges and discharged at a regulated rate over sandy sea bed helping to ensure optimum stocking density on prime scallop habitat. They are left to grow, for 4 years before harvesting by divers or fishing vessels using scallop dredges.



Figure 3.1. Location of Zhangzidao Island in relation to Dalian, China.



Figure 3.2. Green outline showing border of exclusive scallop fishing area around Zhangzidao Island

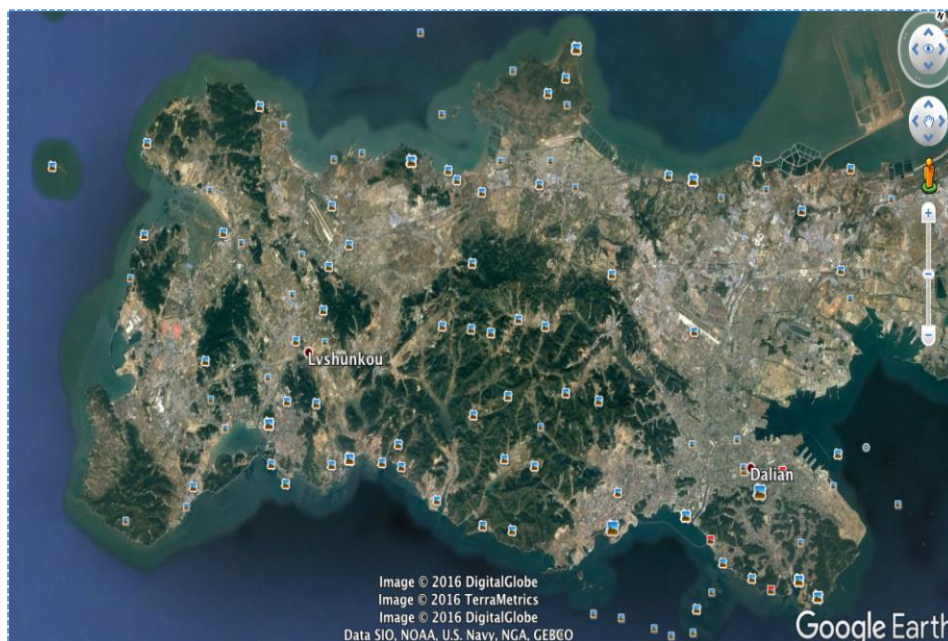


Figure 3.3. The western tip of the Liandong Peninsula in relation to Dalian (south east corner of the satellite image).



Figure 3.4. Spat collecting areas at Lvshun on the western tip of the Liandong Peninsula

**UoC 2 - Hatch and Catch (HAC)** - Scallop brood stock, harvested by divers, is brought into hatchery facilities on Zhangzidao Island where they are placed in optimum conditions that encourage spawning. Spat larvae are collected and on-grown in large holding tanks fed by seawater. Algae is cultured and used to supplement food at particular larval stages. No chemicals or artificial food is added at any stage of the culture process. The spat take 4 - 6 months to reach 5 - 10 mm shell width before being removed from the hatchery, placed in pearl nets and suspended from anchored and buoyed ropes at sea for a further 4 - 6 months. The scallops are then removed and sown over designated areas in the same way as in UoC 1.

**UoC 3 – Diver** - In the inshore area, in depths of less than 25 m, diving is used for harvesting the broodstock for the hatcheries as well as providing a premium diver caught scallop product. There are 38 registered divers in Zoneco Group. The divers work in pairs using their hands or rakes to fill netted bags that are brought to an attending surface boat. An area is only fished one year in four.

**UoC 4 – Dredge** - In water greater than 25 m, fishing vessels use relatively light weight twin dredges to harvest the sown scallops. The dredges have net bags with 8 cm mesh that allows scallops of less than 3 - 4 years old to escape. The dredges are towed at approximately 1 knot, for 5 - 10 minutes. The dredges are equipped with wheels to reduce drag. Spring loaded rakes on the dredge bar aid fishing efficiency by improving contact and helping lift scallops out of the seabed over uneven ground. In 2017 there are 27 vessels in the Zoneco Group registered for fishing (see Appendix 6). A fleet of vessels will fish an area in staggered line astern each other, ensuring as much of the sea-bed is fished. An area is only fished one year in four.

### 3.1 Changes in the management system

At last year's surveillance audit it was reported that there had been a major shift toward hatchery-rearing of scallops for relaying on the fishing grounds in comparison with the harvesting and relaying of seed mussel. This has continued over the last 6-12 months with all production in 2016 being from hatchery-reared juveniles. In recent years, major improvements in rearing techniques in the hatchery have permitted the production of large numbers of juvenile scallops for relaying, but the underlying reason for this change in emphasis is the relative economics of the two methods of obtaining juvenile scallops for on-growing in the fishery. The costs of the catch and grow element of the fishery are very much higher than the hatchery element of the business. The Client confirmed that this trend is likely to continue in 2017 and future years, although there may still be some local collection of scallop spat for relaying in the future. Landings of adults from dredging operations in 2016 totaled 18,939 mt which is



very similar to landings in 2015. However, landings of adults from diving operations declined from 1,000 mt in 2015 to under 300 mt in 2016. The Client advised that this decline was due to the dive fishery being in a different area in 2016. Full details of harvests from the 4 UoCs is given in section 3.8. Although there were no landings from UoC1 (Wild spat collection using suspended ropes and on-grown in pearl nets, i.e. catch and grow (CAG)), such collection of wild spat may continue in the future, so there was no requirement to revise the 4 UoCs that currently comprise the fishery.

A new organization was set up in December 2016 by the Client Group comprising of local fishers, the local academy and the Client Group to help share knowledge and information on scallop aquaculture and fisheries and to help with communication between all stakeholders.

### **3.2 Changes in relevant regulations**

There were no reported changes in regulations to the fishery.

There were no reported infringements of the regulations since the previous surveillance audit.

### **3.3 Changes to personnel involved in science, management or industry**

There were no reported changes in personnel within the science, management or harvesting sector of the fishery which would have a significant influence on the way in which the scallop fishery is managed.

### **3.4 Changes to scientific base of information including stock assessments**

There have been no significant changes to the hatchery-rearing and harvesting components of the fishery since the last surveillance audit. Trials have been instigated to assess the potential for rearing juveniles in metal cages on the seabed. The aim is to ensure that the juveniles do not move and therefore remain in the specifically-chosen area thereby providing stability of the settlement site. Results from these trials are expected in approximately four years when the seeded juveniles will have had an opportunity to grow to commercial size.

The Client provided information on a series of research projects being undertaken by research institutes in China. The research includes: a two year study by the Yellow Sea Fisheries Research Institute in Qingdao of the ecological carrying capacity of the Zhangzidao Island for marine ranching of scallops; a study by the Institute of Oceanology, Chinese Academy of Sciences (IOCAS) in Qingdao of spatial and temporal variability of the marine environment for ranching of scallops, the relationship between growth and yield of scallops and environmental conditions and the establishment of methods and standards for monitoring; a study by Dalian Ocean University in conjunction with Zoneco Group Ltd. on the promotion of farming methods around Zhangzidao Island and the range of species that might be suitable for marine ranching.

A profile of the research institutes and the research related to the Zhangzidao scallop fishery are given in Appendix 4.

### **3.5 Changes and updates on Ecosystem issues**

Following the recommendation by the audit team at the 1<sup>st</sup> surveillance audit in 2016, the Client has instigated observer sampling of the bycatch, both by the Environmental Monitoring Centre that undertakes monthly sampling of scallops and seawater quality, and by fishing vessel captains from Zoneco Group, observing bycatch practices on vessels other than their own vessel. Further details are given in section 4.3.

A further change is that data from water quality inspections are now sent directly to the processing plant so that Zoneco Group can react immediately to any possible impact of any changes in water quality.

No other significant changes in relation to ecosystem effects were reported.

### **3.6 Updates on enhanced fishery's position in relation to scope criteria**

An enhanced fishery shall not be eligible for assessment if it does not conform to one or more of the scope criteria set out in Table C1 from MSC CR v1.3. At the 1<sup>st</sup> surveillance audit in 2016, the audit team conducted a thorough review of each of the criteria. As the catch and grow (CAG) element of the

fishery was not active in 2016, the audit team again reviewed the criteria. Table 3.1 (Table C1 from the MSC CRv1.3) below indicates the audit team's findings and conclusions:

Table 3.1 Scope criteria for enhanced fisheries

Linkages to and maintenance of a wild stock	
<b>A1.</b>	At some point in the production process, the system relies upon the capture of fish from the wild environment. Such fish may be taken at any stage of the life cycle including eggs, larvae, juveniles or adults. The 'wild environment' in this context includes marine, freshwater and any other aquatic ecosystems.
<p><b>Findings:</b></p> <p>The MSC certified scallops from this fishery have either originated from:</p> <ol style="list-style-type: none"> <li>1. Wild spat collected using rafts of spat collectors placed strategically in prevailing currents in coastal waters off the coast near Lvshun; or</li> <li>2. Wild adult scallops harvested by divers that have been used as broodstock to produce hatchery reared scallop spat.</li> </ol> <p><b>Conclusion:</b></p> <p>Whilst there was no collection of wild spat in 2016, this element of the fishery may be re-introduced in future years, and wild adult scallops continue to be harvested by divers for use as broodstock in the hatchery. The audit team concluded that the Zhangzidao scallop fishery continues to rely on the capture of scallop from the 'wild environment' and so continues to meet criteria A1.</p>	
<b>A2.</b>	The species are native to the geographic region of the fishery and the natural production areas from which the fishery's catch originates unless MSC approval has been given to include introduced species for the pilot phase.
<p><b>Findings:</b></p> <p>The Yesso scallop (<i>Patinopecten yessoensis</i>) is an introduced species. It was introduced to the Yellow Sea in 1982. There are no formal historical records of the species existing in the Yellow Sea before this introduction. The audit team were told by retired fishermen that scallops were introduced by fishermen as a potential alternative resource following the decline of the pelagic and demersal fisheries more than 40 years ago.</p> <p>At the original assessment of this fishery the assessment team evaluated Yesso scallop against MSC Provisional Scope Criteria for Introduced Species Based Fisheries - Table CJ1 (Annex CJ MSC CR v1.3). They concluded that Yesso scallop met the criteria. MSC approved the conclusion and confirmed this is an Introduced Species Based Fishery (Interek 2015).</p> <p><b>Conclusion:</b></p> <p>While considered an introduced species it is within scope as it meets requirements set out in Annex CJ of the MSC CR v1.3, which have been confirmed by the MSC.</p>	
<b>A3.</b>	There are natural reproductive components of the stock from which the fishery's catch originates that maintain themselves without having to be restocked every year.
<p><b>Findings:</b></p> <p>Both the dive and dredge caught fisheries rely on either the capture of wild spat produced by spawning adult scallops that live in the wild or from wild scallops that spawn in the hatchery with their larvae and spat being on-grown for approximately 4 – 6 months before being returned to the wild.</p> <p><b>Conclusion:</b></p> <p>There are natural reproductive components of the stock from which the fishery's catch originates that maintain themselves without having to be restocked every year.</p>	
<b>A4.</b>	Where fish stocking is used in HAC systems, such stocking does not form a major part of a current rebuilding plan for depleted stocks.
<b>Note to A4</b>	This requirement shall apply to the "current" status of the fishery. Wild stocks shall be managed by other conventional means. If rebuilding has been done by stocking in the

	past, it shall not result in an out-of-scope determination as long as other measures are now in place.
<p><b>Findings:</b> There is no formal assessment of the wild stock. The Risk Based Framework (RBF) was used at the assessment of the fishery to score PI 1.1.1, "The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing". The outcome of the Productivity Susceptibility Analysis (PSA), converted to MSC scores, resulted in all the UoCs scoring between 95 and 100. The audit team were not made aware of changes in the fishery that would significantly affect these scores. Therefore the stock is not considered to be depleted nor has it been considered depleted in the past.</p> <p><b>Conclusion</b></p> <p>The HAC system does not form part of a rebuilding plan. The Yesso scallop stock is not depleted nor has it ever been.</p>	
<b>Feeding and husbandry</b>	
<b>B1.</b>	The production system operates without substantial augmentation of food supply. In HAC systems, any feeding is used only to grow the animals to a small size prior to release (not more than 10% of the average adult maximum weight), such that most of the total growth (not less than 90%) is achieved during the wild phase. In CAG systems, feeding during the captive phase is only by natural means (e.g. filter feeding in mussels), or at a level and duration that provide only for the maintenance of condition (e.g. crustacean in holding tanks) rather than to achieve growth.
<p><b>Findings:</b></p> <p>During the hatchery stage (~ 4 - 6 months) the scallops feed on the phytoplankton that enters the hatchery with the supplied seawater i.e. the scallop food is from the immediate 'wild environment'. This may be supplemented with small amounts of algae to assist growing to a small size prior to being released to the wild where they grow for four years before being harvested.</p> <p>The average weight of a 4 - 6 month old scallop is 0.18 gm. The average weight of an adult scallop is 150 gms, i.e. &lt; 10%.</p> <p><b>Conclusion:</b></p> <p>The HAC system operates without substantial augmentation of food supply.</p>	
<b>B2.</b>	In CAG systems, production during the captive phase does not routinely require disease prevention involving chemicals or compounds with medicinal prophylactic properties.
<p><b>Findings:</b></p> <p>The CAG system in this fishery does not use chemicals or compounds with medicinal prophylactic properties.</p> <p><b>Conclusion:</b></p> <p>The captive phase of this fishery's CAG system, does not use disease prevention involving chemicals or compounds with medicinal prophylactic properties.</p>	
<b>Habitat and ecosystem impacts</b>	
<b>C1.</b>	Any modifications to the habitat of the stock are reversible and do not cause serious or irreversible harm to the natural ecosystem's structure and function.
<b>Note to C1</b>	<p>Habitat modifications that are not reversible are already in place and not created specifically for the fishery shall be in scope. This includes:</p> <ul style="list-style-type: none"> <li>• Large-scale artificial reefs;</li> <li>• Structures associated with enhancement activities that do not cause irreversible harm to the natural ecosystem inhabited by the stock, such as salmon fry farms.</li> </ul>
<p><b>Findings:</b></p> <p>The fishery uses a system of anchored and buoyed ropes to support strings of pearl nets for juvenile scallop on-growing. At this stage there is no bottom contact apart from the relatively small areas required for the anchors. Although some habitat impact is inevitable, possibly through siltation or</p>	

pseudo-faecal smothering, there is nothing to suggest that any modifications that occurred would be irreversible.

The dredge fishery is carried out with scallop dredges that have wheels to reduce drag and indirectly reduce impact on the sea bed. The dredge is fitted with spring loaded rakes that help to lift scallops out of the seabed and improve fishing efficiency by following sea bed contours. The post-fishing recovery time for the sea bed habitat is 4 years (Intertek, 2015).

The dive fishery is considered to cause minimal impact as divers are more easily able to discriminate and select scallops as they harvest.

The dredge and dive fisheries both operate on a 4 year rotational basis, meaning an area is only fished every 4 years.

**Conclusion:**

Any modifications to the habitat of the stock are not considered to be irreversible or cause serious harm to the natural ecosystem's structure and function.

**Overall Conclusion in Relation to Meeting Enhanced and Introduced Species Criteria:**

The fishery remains in scope as an enhanced, introduced species based fishery.

### 3.7 Any developments or changes within the fishery which impact traceability or the ability to segregate between fish from the Unit of Certification (UoC) and fish from outside the UoC (non-certified fish)

The audit team conducted a thorough review of traceability in the fishery at the 1<sup>st</sup> surveillance audit in 2016 (Acoura, 2016). The Client reported that no changes had taken place within the operation of the fishery since the last surveillance audit that would impact on traceability or the ability to segregate between scallops from the UoCs and non-certified scallops from outside the UoC.

### 3.8 TAC and catch data

**Table 3.8-1 TAC and Catch Data**

There is no TAC for this fishery.

Units of Certification		Production figures	
		2015 (mt or numbers)	2016 (mt or numbers)
1	Wild spat collection using suspended ropes and on-grown in pearl nets, i.e. catch and grow (CAG)	300 million	0
2	Hatchery reared spat on-grown in pearl nets i.e. hatch and catch (HAC)	2.1 billion	21.26 billion
3	Harvesting of adults using diving	999.1 mt	278.7 mt
4	Harvesting of adults using dredging	18,265.6 mt	18,939 mt



### 3.9 Summary of Assessment Conditions

Table 3.9-1 Summary of Assessment Conditions

Condition number	Performance indicator (PI)	Status	PI original score	PI revised score
1	3.2.2	Closed at 1 <sup>st</sup> surveillance audit	75	80
2	3.2.5	On target	75	75

## 4 Results

### 4.1 Condition 1 (UoCs 1, 2, 3, 4)

Performance Indicator & Score	PI number	Scoring Guidepost text	Score
	3.2.2	<b>Explanations are provided for any action or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity (Scoring Issue 80d).</b>	<b>75</b>
<b>Condition</b>	<p>By the third annual audit, for all Units of Certification, the client must provide evidence to demonstrate that:</p> <p>Explanations are provided for any action or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity – (Scoring Issue d).</p>		
<b>Milestones</b>	<ol style="list-style-type: none"> <li>1. The client will provide an update and evidence of the actions that have been taken to meet the condition.</li> <li>2. The client will provide evidence of the use of information gathered by the research projects to inform decision-making in a precautionary manner for all the units of certification.</li> <li>3. By the third annual audit, for all Units of Certification, the client must provide evidence to demonstrate that explanations are provided for any action or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity – (Scoring Issue d).</li> </ol> <p>All of the milestones have been defined as a means to monitor progress in meeting the condition. Meeting the milestone requirements would likely not result in a change of score at surveillance audits 1 - 2.</p> <p>Provided the actions defined in the milestones and the deliverables in the client action plan are met, the PI would likely be re-scored at 80 or higher.</p>		
<b>Client Action Plan</b>	<p>Zoneco Group and the Institute of Oceanology, Chinese Academy of Sciences has completed the project “Aquatic farming system establishment in the North Yellow Sea”. This work is being used as an evaluation basis for Zhangzidao scallop. The results will be summarized and its application on Zhangzidao scallop will be reviewed and explained.</p> <p>Included in this project are studies on the relationship between bottom matrix, temperature, farming density, feeds, survival rates of sowed scallop, growth status and relative fatness. As well physical factors such as sea current, temperature, sea water chemistry, ecosystem data, etc, were investigated and analyzed, and will be input for bottom sowing density control and farming management.</p> <p>Data from work recently completed studies including: “Scallop bottom sowing in autumn”, “Releasing technique research for scallop marking” and “Farming techniques for raft culture”, “Environmental online checks for sea stations” and “Scallop survival investigation at different sea stations”, will be analysed and used to inform decision making. Further work on investigating environmental and bio-factors within the Zhangzidao registered sea area will be carried out.</p>		

	<p>The processes and results from all the above projects will be used to demonstrate that decision-making processes use the precautionary approach and are based on best available information.</p> <p><b>Year 1</b></p> <p>The client will provide an update and evidence of the actions that have been taken to meet the condition.</p> <p><b>Year 2</b></p> <p>The client will provide evidence of the use of information gathered by the research projects to inform decision-making in a precautionary manner for all the units of certification.</p> <p><b>Year 3</b></p> <p>The client will provide evidence to demonstrate that explanations are provided for any action or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.</p>
<b>Progress on Condition [Year 1]</b>	<p>The audit team met with staff from the Zhangzidao Marine Research institute. Presentations on their work showed a broad range of monitoring, research and development. Examples are highlighted in section 2.4 of this audit report.</p> <p>It was clear that the suite of work undertaken at the Institute feeds in to the management of the fishery. Examples of this include:</p> <ol style="list-style-type: none"> <li>1. Improvements in hatchery husbandry techniques which have resulted in improved larval and spat survival and production rates. As a result, of this and economic factors related to wild spat collection, hatchery produced spat now surpasses wild caught spat.</li> <li>2. Seabed mapping has identified some areas within the Zhangzidao designated fishing area with high mud content. This type of substrate is not good for scallop growing. As a result, a management decision was taken to reduce the production area for scallops.</li> </ol> <p>The client provided a translation of a shareholder update that explains the management decision to reduce the production area (see Appendix 2).</p> <p>The audit team conclude that evidence was provided that demonstrates that explanations are provided for action or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.</p>
<b>Status of condition</b>	<p>Progress against this condition is ahead of target. Information provided at last year's audit satisfied the audit team that the SG 80 had been met and the condition can therefore be closed, and the team are satisfied this still applies. A revised scoring rationale was provided in Appendix 1 of the 1<sup>st</sup> surveillance audit report (Acoura, 2016).</p>

## 4.2 Condition 2 (UoCs 1, 2, 3, 4)

	PI number	Scoring guidepost text	Score
<b>Performance Indicator &amp; Score</b>	3.2.5	<b>The fishery-specific management system is subject to regular internal and occasional external review. (Scoring Issue 80b)</b>	75

<b>Condition</b>	By the fourth annual surveillance the client must show evidence of an external review of the fisheries specific management system to have taken place and a programme to continue occasional external reviews.
<b>Milestones</b>	<ol style="list-style-type: none"> <li>1. By the first annual audit, the client must provide evidence that there is commitment for an external review of the management system by an external agency.</li> <li>2. By the second annual audit the client must report on progress in establishing this external management review.</li> <li>3. By the third annual audit the client must report on progress in establishing the external management review.</li> <li>4. By the 4<sup>th</sup> annual audit the client must show evidence of an external review of the fisheries specific management system to have taken place and a programme to continue occasional external reviews.</li> </ol> <p>All of the milestones have been defined as a means to monitor progress in meeting the condition. Meeting the milestone requirements would likely not result in a change of score at surveillance audits 1-3.</p> <p>Provided the actions defined in the milestones and the deliverables in the client action plan are met, the PI would likely be re-scored at 80 or higher.</p>
<b>Client Action Plan</b>	Zoneco Group will invite the independent consultancy services of Ernst & Young Global Limited and SGS to evaluate the whole system of Zhangzidao scallop farming. As well, every 2 years an independent external evaluation on Zhangzidao Fishery will be carried out and be used in the management review and implemented by the Zoneco Group.
<b>Progress on Condition [Year 1]</b>	<p>The client provided a 200+ page report undertaken by Ernst &amp; Young that reviewed management aspects of the Zhangzidao Scallop Fishery. The report was provided in Mandarin.</p> <p>Following discussion with the client it became apparent that the report reviews the business aspects of the Zhangzidao Scallop Fishery.</p> <p>The audit team conclude that there was a misunderstanding of the required intent and outcome of this condition as the report does not look at the practical aspects of managing the fishery.</p> <p>The audit team commend the client for the rapid production of the report and their clear intent to fulfil the condition within the first year of the certification.</p> <p>The audit team consider that the client has provided evidence of their commitment for an external review by an external agency thereby meeting the first annual milestone. However, given the focus of the report is not on the management aspects that were required by the condition, the audit team recommend that the client appoints an external individual(s) or organisation with recognised expertise in scallop culture and harvesting, and have them review the fishery with the intent of offering observations and recommendations for the potential improvement in how the fishery might operate, e.g. by comparing aspects of the fishery with management best practice from elsewhere around the world.</p> <p>The audit team note that the Zoneco Group has established strategic relations with research institutes in China and Norway and these links may provide an ideal opportunity to implement a management review and initiate further occasional external management reviews.</p> <p>The audit team also recommend that the client carefully consider how the report is presented and updated as it could provide a valuable information source to assist the client in future MSC audits and/or re-assessments.</p>

	<p>The audit team do not think it necessary to revise the milestones that were set when the fishery was certified and consider the 2<sup>nd</sup> annual milestone is the point of reference for the next annual audit.</p> <p>Progress toward meeting the condition was considered to be on target</p>
<p><b>Progress on Condition</b> <b>[Year 2]</b></p>	<p>In addition to previous provision at the 1<sup>st</sup> surveillance audit of the 200+ page report undertaken by Ernst &amp; Young that reviewed management aspects of the Zhangzidao Scallop Fishery, at this year's surveillance audit the Client also provided summaries of research projects being undertaken on the Zhangzidao scallop fishery and environment by the Yellow Sea Fisheries Research Institute in Qingdao, the Institute of Oceanology, Chinese Academy of Sciences (IOCAS) in Qingdao and the Dalian Ocean University in conjunction with Zoneco Group Ltd. (see Appendix 4 for further details).</p> <p>The Ernst and Young report reviews the business aspects of the Zhangzidao Scallop Fishery, and whilst the research projects look at the practical aspects of managing the fishery, the audit team did not consider either the Ernst and Young report or the research projects constituted an external review of the management system as required under this condition.</p> <p>The audit team consider that the client has provided evidence of their commitment for an external review of the fishery, but considered that there is still some misunderstanding by the Client of what is required under this condition. Given the focus of one review was on the business aspects of the fishery, and the research projects could not be considered to be a full review of the management system, the audit team continues to recommend that the client appoints an external individual(s) or organisation with recognised expertise in scallop culture and harvesting, and have them review the fishery with the intent of offering observations and recommendations for the potential improvement in how the fishery might operate, e.g. by comparing aspects of the fishery with management best practice from elsewhere around the world.</p> <p>The audit team note that the Zoneco Group has already established strategic relations with research institutes in China and Norway and these links may provide an ideal opportunity to implement a management review and initiate further occasional external management reviews.</p> <p>As the research projects initiated could be considered to be investigating the practical aspects of managing the fishery, the audit team concluded that the Client had made progress in progress in establishing an external management review, and that the condition was on target. A more focused review will however be required to close this condition.</p>
<p><b>Status of condition</b></p>	<p>Progress toward meeting the condition is on target.</p>

### 4.3 Recommendations

**Recommendation 1.** The audit team recommended that the client uses occasional independent observers to monitor the non-target species in the catch and make comparisons with data recorded by the captains. The observer programme should consider collecting additional data, e.g. non-target species size and weight, which would help contribute to the overall environmental monitoring being undertaken by the client. Such information will contribute to and support the re-assessment of the fishery.

In response to this recommendation, since the last surveillance audit the Client has contracted the Environmental Monitoring Centre that carries out the monthly sampling of scallops and water quality, to also undertake monthly sampling of the bycatch. In addition, the Client has also used vessel captains to participate in fishing trips of other vessels and monitor the bycatch sampling protocol undertaken on these other vessels. The Client has therefore made significant progress in relation to this recommendation.

**Recommendation 2.** The client considers appointing an external individual(s) or organisation with recognised expertise in scallop culture and harvesting, and have them review the fishery with the intent of offering observations and recommendations for the potential improvement in how the fishery might operate, e.g. by comparing aspects of the fishery with management best practice from elsewhere around the world. In so doing, the client may want to consider how the report is presented and updated as it could provide a valuable information source to assist the client in future MSC audits and/or re-assessments.

In response to this recommendation, the Client has provided summaries of research projects on the practical aspects of the management of the fishery, but as yet has not implemented a full independent review of the management system within the fishery.

## 5 Conclusion

### 5.1 Summary of findings

The fishery continues to operate at a high level. Condition 1 was closed at the 1<sup>st</sup> surveillance audit. Condition 2 is on target and remains open. Next year's 3<sup>rd</sup> surveillance audit can be "off-site".

The fishery continues to be certified.

## 6 References

Acoura, 2016. Report of the 1st Surveillance Audit for the Zhangzidao Scallop Fishery.

[https://fisheries.msc.org/en/fisheries/zhangzidao-scallop/@\\_@assessments](https://fisheries.msc.org/en/fisheries/zhangzidao-scallop/@_@assessments)

Intertek 2015, Public Certification Report, Zhangzidao Scallop Fishery [https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/pacific/zhangzidao-scallop/assessment-downloads-1/20150413\\_PCR\\_SCA326.pdf](https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/pacific/zhangzidao-scallop/assessment-downloads-1/20150413_PCR_SCA326.pdf)

MSC Certification Requirements Version 1.3 <https://www.msc.org/documents/scheme-documents/fisheries-certification-scheme-documents/msc-scheme-requirements/msc-certification-requirements>

MSC Fisheries Certification and Guidance Version 2.0 <https://www.msc.org/documents/scheme-documents/fisheries-certification-scheme-documents/fisheries-certification-requirements-version-2.0>

## **Appendix 1 – Re-scoring evaluation tables**

At the 1<sup>st</sup> surveillance audit in 2016, the scoring rationale for PI 3.2.2 was revised and the fishery re-scored at 80 for this PI. Condition 1 was therefore closed (see Acoura, 2016 for further details).

## **Appendix 2 - Stakeholder submissions**

None



### **Appendix 3 - Surveillance audit information**

N/A

#### **Appendix 4 - Additional detail on conditions/ actions/ results**

The client provided the following translated document in part evidence to support the work carried out in relation to progress on Condition 2.

#### **Profile of Research Institutes and Summary of Research Projects**

##### **1、Ecological fishery project**

Yellow Sea Fisheries Research Institute of CAFS (YSFRI), is a multidisciplinary marine and fisheries research institute. It was inaugurated in Shanghai as ‘the Central Fisheries Laboratory, Ministry of Agriculture and Forestry’ in January 1947, and moved to Qingdao in December 1949.

336 staffs are currently working in YSFRI, including three Academicians of Chinese Academy of Engineering and 102 senior scientists and technicians. Three of them have been awarded as National Prominent Experts; three of them have been elected by the National Ten thousand Talents Project; and 56 of them have received special allowance from the government. There are 42 doctorate and graduate supervisors, and one post-doc work station in YSFRI.

In the past 60 years, YSFRI has been aiming at the mission of ‘Exploitation and sustainable utilization of marine biological resources’, focusing her work on fishery resource investigation, fishing technology, mariculture and enhancement, fish product processing and quality inspection, etc. YSFRI researchers have accomplished more than 1000 national and ministerial research projects, obtained over 300 major national and ministerial research achievements, received about 100 national and ministerial awards. Especially in recent years, YSFRI faces the needs of China’s economic development and scientific innovation, adjusting research subjects, recruiting talents, and has carried out innovative research and obtained great success in subject areas such as marine biological resource assessment and ecosystem level management, mariculture ecology and carrying capacity, germplasm resources and genetic breeding, disease control and molecular pathology for mariculture organisms, marine bio-product resource

and enzymic engineering, marine environmental fishery and bio-remediation, safety and quality test for fish products, and marine finfish cultivation and intensive mariculture.

In 2015 -2017, commissioned by the Yellow Sea Fisheries Research Institute of Chinese Aquatic of Fishery Sciences for the study of ecological fishery projects in Zhangzi Island waters. Each year the company paid 1 million yuan to the Yellow Sea Institute. The main research contents include: Food base of Zhangzi Island marine ranching Japanese Scallop bottom sowing, the proliferation of Zhangzi Island Marine Ecological capacity assessment and management strategy, Zhangzi Island marine ranching construction and demonstration of the new mode of production.

**Web:**<http://ysfrien.qogee.com/default.aspx>

## **2、 Research on key technologies of modern sea ranching in northern Yellow Sea**

The Institute of Oceanology, Chinese Academy of Sciences (IOCAS), which is located in Qingdao, Shandong Province, was founded in 1950. It is the first ocean research institute in China.

During its 63-year history, the institute has trained around 1,000 senior scientists and technicians. At present, the institute has nearly 500 scientific and technical personnel, including 175 senior research technicians and 101 doctoral instructors.

The institute is home to five CAS key laboratories in the fields of experimental marine biology; marine ecology and environmental sciences; ocean circulation and wave studies; marine geology and environment; and marine corrosion and protection. It also has an institute-level key laboratory devoted to marine organism taxonomy and phylogeny studies.

The institute also has three R&D centers, which are devoted, respectively, to marine biotechnology; marine environmental engineering, and marine corrosion and protection.

In addition to the above facilities, IOCAS has the Shandong Provincial Key Laboratory of Corrosion and Environment Sciences as well as the Jiaozhou Bay National Marine Ecosystem Research Station; the CAS Regional Center for Marine Science; and the Supercomputing Center. These facilities form a multidisciplinary research system that covers all major areas of marine science.

The CAS Marine Biological Specimen Museum is the largest of its kind in China and houses the most comprehensive collection in Asia, with more than 778,000 specimens. The museum has 1,475 type specimens discovered and named by institute scientists. Among its specimens, more than 50,000 have been digitized and nearly 30,000 have achieved digital sharing.

The CAS Mariculture Core Gene Bank has preserved 60 macro and micro marine alga species and more than 1,000 culture systems, thus providing support for the sustainable development of China's aquaculture industry.

The institute's marine research fleet comprises three main research ships, Science I, Science III and Kexue ("Science"). The latter is a national state-of-the-art masterpiece. At 99.8 m in length, 17.8 m in width, and with a draught of 8.9 m, Kexue has a range of 15,000 nautical miles and has a crew of 80. The fleet has sailed all over China's territorial waters as well as into deep-ocean waters, making outstanding contributions to China's marine science.

IOCAS is the only unit granting marine science A-class doctorates among China's marine research institutes. It has enrolled graduate students since 1956. Since 1979, IO has enrolled more than 1,600 students, ranking first among national marine research institutions. The institute has 12 units granting doctorates, 10 units granting master's degrees, and three units granting professional engineering master's degrees.

Since its founding, the institute has established long-term relationships with scientific research institutes from more than 40 countries or regions. There are 53 scientists from IOCAS representing China holding various

positions in many major international scientific organizations. The institute has also hosted several international scientific conferences including the 11th International Seaweed Symposium, the 9th International Marine Biotechnology Conference, the 4th International Conference on Asian Marine Geology, the 8th conference on Partnership for Observation of the Global Oceans, etc. IOCAS is actively involved in about 100 international marine research programs, such as the Sino-Japanese East China Sea Marine Flux Study, the Sino-American Ocean Current and Sedimentation Study in the South Yellow Sea, the Sino-Norwegian Marine Biodisease Prevention Program, the Tropical Ocean Global Atmosphere-Coupled Ocean Atmosphere Response Experiment (TOGA COARE), the Sino-South Korean Joint Investigation of the Yellow Sea, the Sino-Japanese Marine Corrosion Environment and Control Study, and the EU 6th Framework Program.

In 2016, commissioned by the Institute of Oceanography Chinese Academy of Sciences to study on the key technology about the construction of modern marine ranching in northern Yellow Sea, the annual payment is 1.5 million yuan to the institute. The main research contents include: to identify the Zhangzi Island marine ranching based productivity control factors and the spatial and temporal variability; to elucidate the relationship between Japanese Scallop in Shell growth and yield and ecological environment; Comprehensive food supply, water temperature, deposition conditions and other factors, the breeding area classification evaluation; numerical model is established based on the observation network in north Yellow Sea, initially with the ecological environment in the operation on the basis of simulation and prediction ability; establish methods and standards for monitoring; propose a theoretical framework of Zhangzi Island marine ranching shellfish production technology system, carry out the preliminary test and study.

Web: <http://english.qdio.cas.cn/>

### 3\Construction and demonstration of the multiplication model of important fishery

Dalian Ocean University (DOU) originated from the Northeastern Fishery Technology School which was first founded in 1952, evolved into Dalian Fisheries Academy in 1958 and Dalian Fisheries University in 1978. DOU was transferred from the administration of the Ministry of Agriculture to the direct administration of Liaoning Province in 2000. In 2010, the present name, Dalian Ocean University, was approved by the Ministry of Education. After successful passing of the Qualified Assessment of Undergraduate Teaching conducted by the Ministry of Education in 1998, in 2008, DOU passed the Quality Assessment of Undergraduate Teaching with 'Excellence'.

DOU owns four key disciplines at the provincial and ministerial level, including one provincial high-level key discipline, Fisheries, and two provincial characteristic sub-disciplines, Hydrobiology/Animal Genetics and Breeding/Reproduction, with one provincial Philosophy/ Social Science key discipline. DOU has eleven disciplines and thirty sub-disciplines which are authorized to confer Master's degrees. As well DOU has forty-seven undergraduate programs and thirty-two senior diploma programs. These include one state-level innovational experimental program for practical skills training. The University has one state level and three provincial level experiment/ teaching demonstration centers, three state-level characteristic specialties, four provincial characteristic/demonstration undergraduate specialties, plus one provincial practical skills training program. DOU owns one state-level processing center, one ministerial level key open laboratory, seven provincial level key laboratories, four provincial level engineering and technology research centers, two provincial level technology service centers as well as four provincial level key laboratory schools.

In 2012-2016, presided by the Dalian Ocean University, Zoneco Group participate in the national project "The important fishery species proliferation mode and proliferation model", the state funds 865 thousand

yuan. The main research contents include: the proliferation of Zhangzi Island waters varieties were selected, bottom sowing proliferation mode researched and establishment of demonstration areas.

## Appendix 5 - Revised Surveillance Program

**Table 5.1 : Surveillance level rationale**

Year	Surveillance activity	Number of auditors	Rationale
3	Off-site audit	2 remote auditors	One condition remains and progress against the condition can be verified remotely.

**Table 5.2: Timing of surveillance audit**

Year	Anniversary date of certificate	Proposed date of surveillance audit	Rationale
3	22 <sup>nd</sup> April 2015	April 2018	There is no reason to delay the 2018 audit much beyond the anniversary date.

**Table 5.3: Fishery Surveillance Program Revised**

Surveillance Level	Year 1	Year 2	Year 3	Year 4
Level 4	On-site surveillance audit	Off-site surveillance audit	Off-site surveillance audit	On-site surveillance audit & re-certification site visit.



**Appendix 6. Updated list of vessels registered to fish.**

No.	Vessel code	Fishery approval cert
1	DCB5130	DCY- (2013) -TD-00018
2	DCB5131	DCY- (2013) -TD-00019
3	DCV5132	DCY- (2013) -TD-00020
4	DCB5133	DCY- (2013) -TD-00021
5	DCB5135	DCY- (2013) -TD-00022
6	DCB5136	DCY- (2013) -TD-00023
7	DCB5137	DCY- (2013) -TD-00024
8	DCB5138	DCY- (2013) -TD-00025
9	LCY15166	L-CB- (2014) HY-103064
10	LCY15167	L-CB- (2014) HY-103065
11	LCY15168	L-CB- (2014) HY-103066
12	LCY15169	L-CB- (2014) HY-103067
13	LCY15170	L-CB- (2014) HY-103068
14	LCY15181	L-CB- (2014) HY-103069
15	LCY15182	L-CB- (2014) HY-103070
16	LCY15183	L-CB- (2014) HY-103071
17	LCY15185	L-CB- (2014) HY-103072
18	LCY15186	L-CB- (2014) HY-103073
19	LCY15187	L-CB- (2014) HY-103074
20	LCY15219	L-CB- (2014) HY-103075
21	LCY15220	L-CB- (2014) HY-103076
22	LCY15221	L-CB- (2014) HY-103077
23	LCY15222	L-CB- (2014) HY-103078
24	LCY15223	L-CB- (2014) HY-103079
25	LCY15233	L-CB- (2014) HY-103035
26	LCY15235	L-CB- (2014) HY-103036
27	LCY15236	L-CB- (2014) HY-103039