



**INTERNATIONAL SEABED AUTHORITY'S WORKSHOP TO STANDARDIZE
MACROFAUNAL TAXONOMY FOR POLYMETALLIC NODULES
EXPLORATION AREAS IN THE CLARION-CLIPPERTON ZONE**



Introduction to Biological Baseline Surveying in COMRA's Contract Area in the CCFZ

COMRA

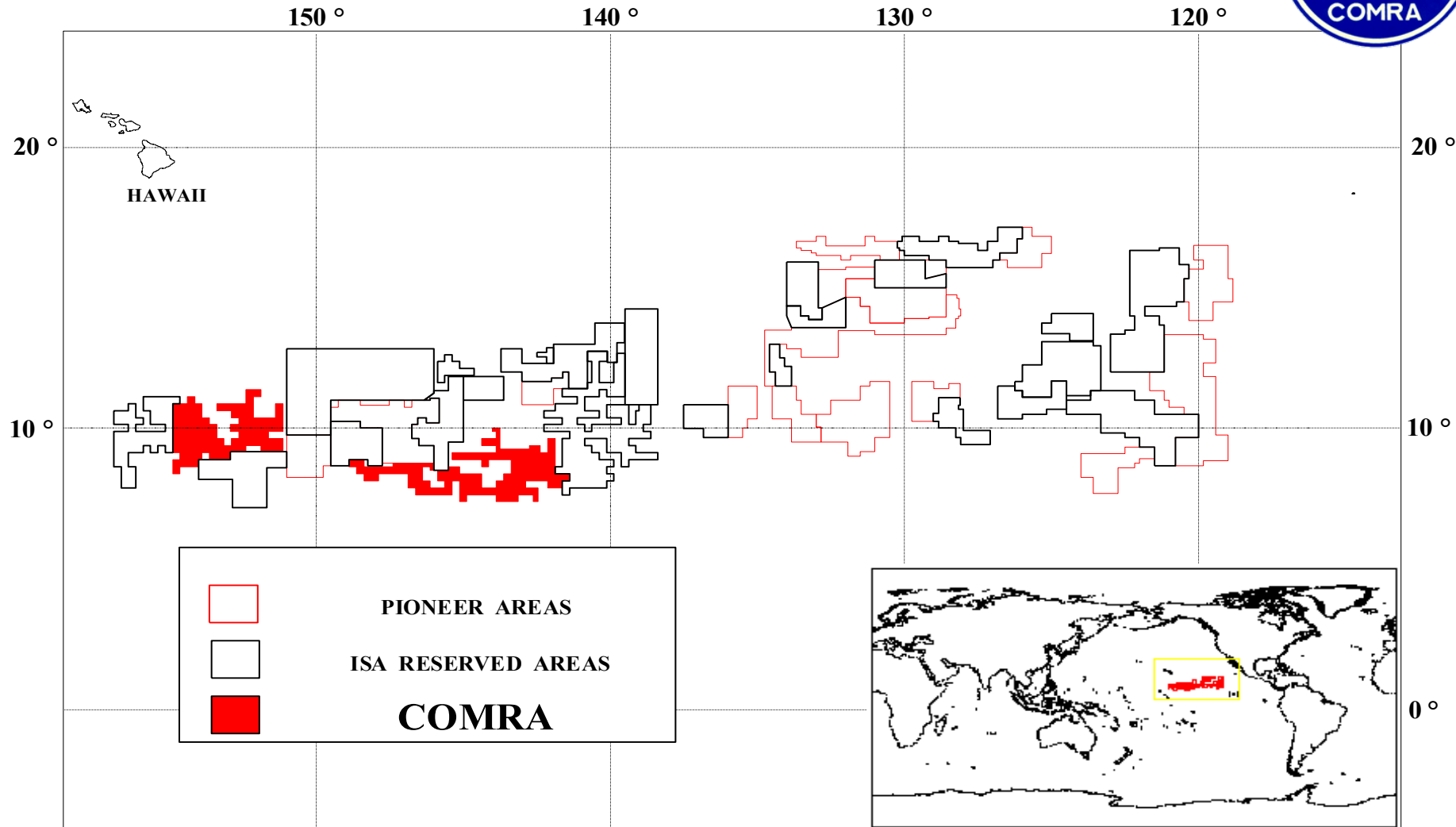
Uljin-gun, Korea 2014. 11



Outline

- 1. Study area and survey information**
- 2. Sample collecting and processing methods**
- 3. Results of benthic fauna in COMRA's contract area**
- 4. Problems in Macrofauna study in deep sea**

1. Study area and survey information



From 1997, COMRA began NaVaBa program in nodule province of the CCFZ

R/V



Dayang 1

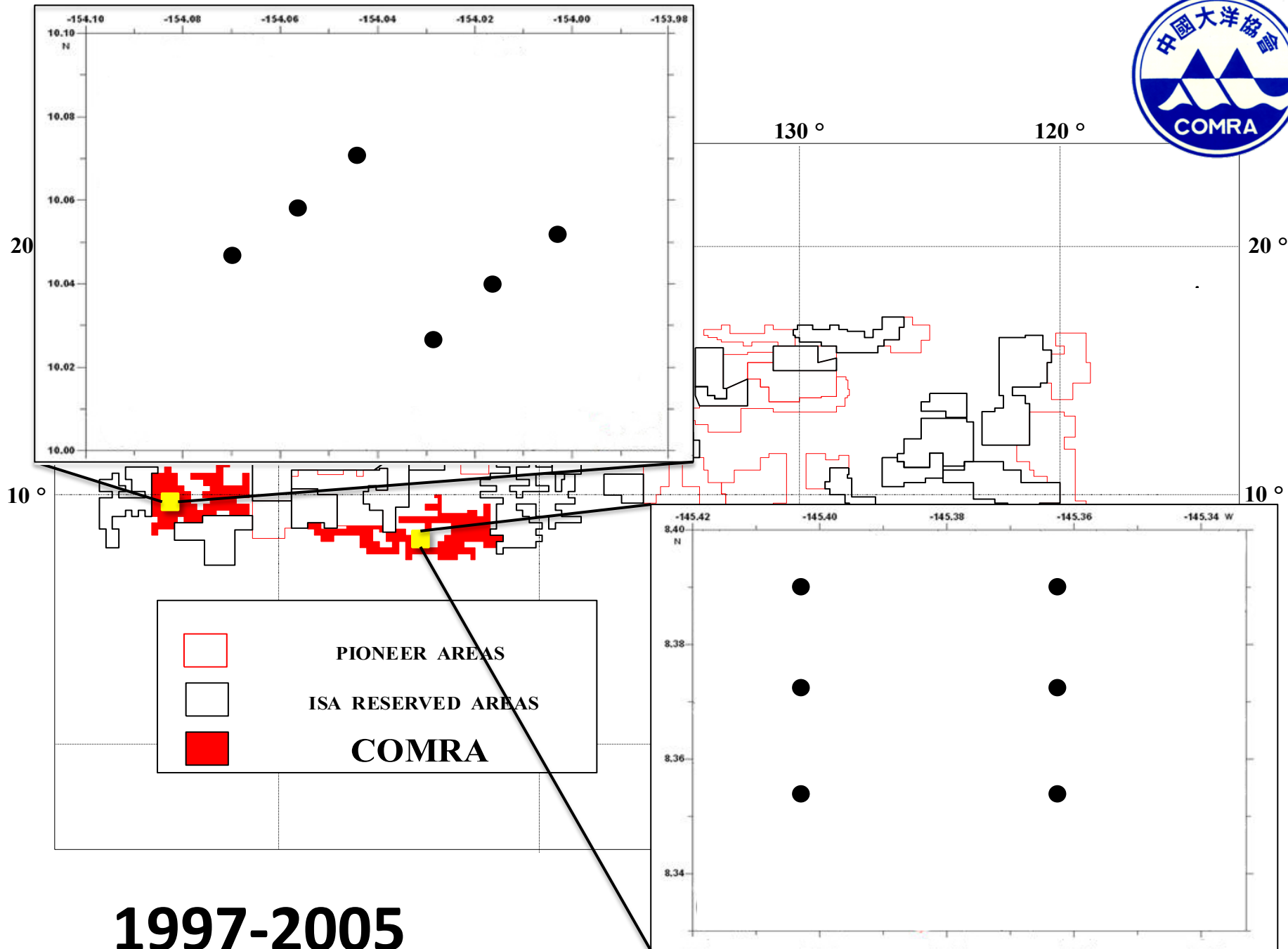


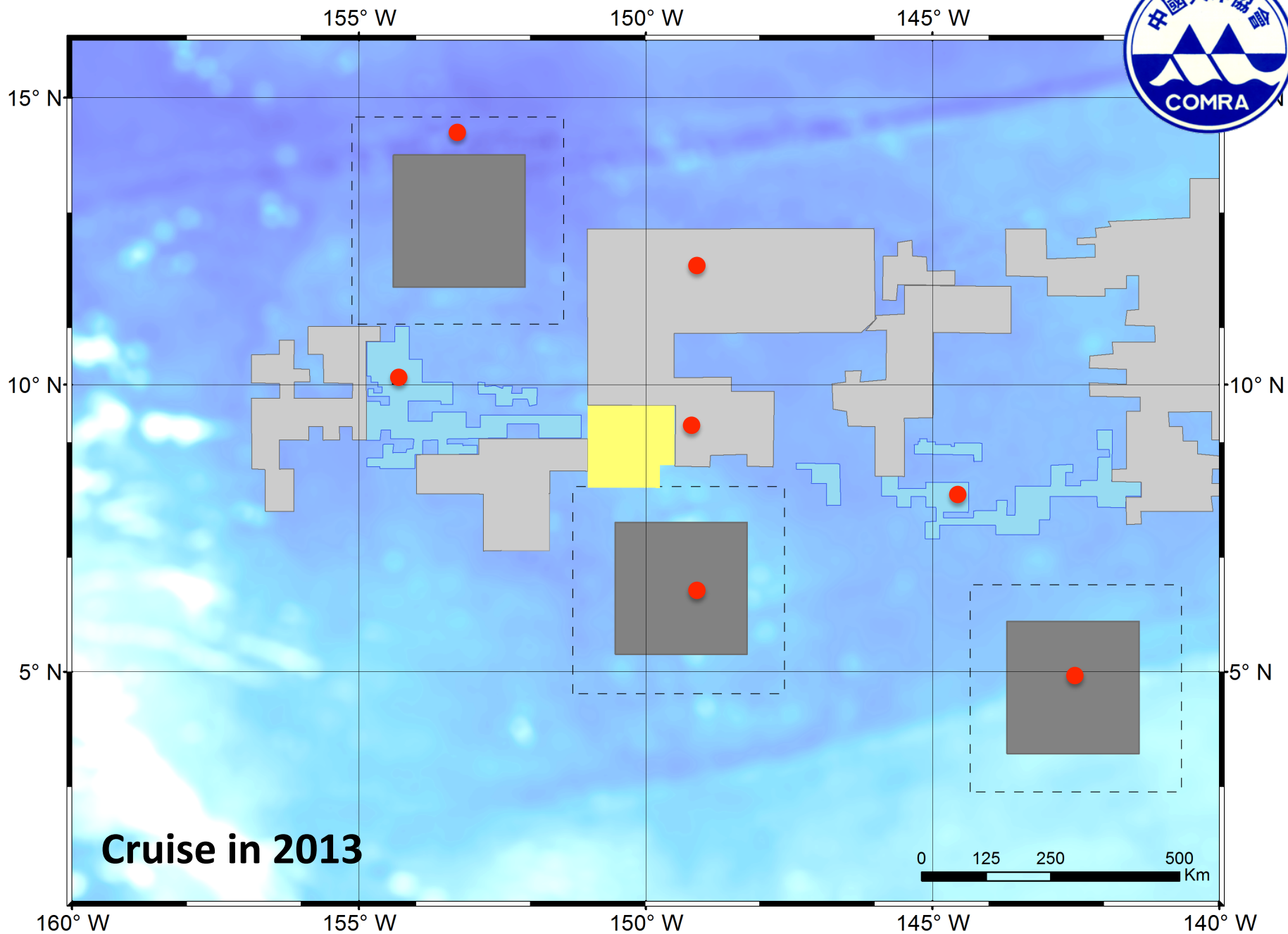
Haiyang 6

Macrofauna samples collected from 9 cruises in COMRA's contract area in CCFZ



Cruise	Year	R/V	Stations Collected	Stations Analyzed	Data submitted to ISA
DY95-06	1997	Da Yang 1	2	0	0
DY95-08	1998	Da Yang 1	8	8	8
DY95-10	1999	Da Yang 1	4	4	4
DY105-11	2001	Da Yang 1	5	5	5
DY105-12	2003	Da Yang 1	8	8	8
DY105-17	2005	Da Yang 1	2	1	0
DY115-20	2008	Da Yang 1	2	1	0
DY125-29	2013	Hai Yang 6	8	1	-
DY125-32	2014	Hai Yang 6	8	0	-
total			47	28	25

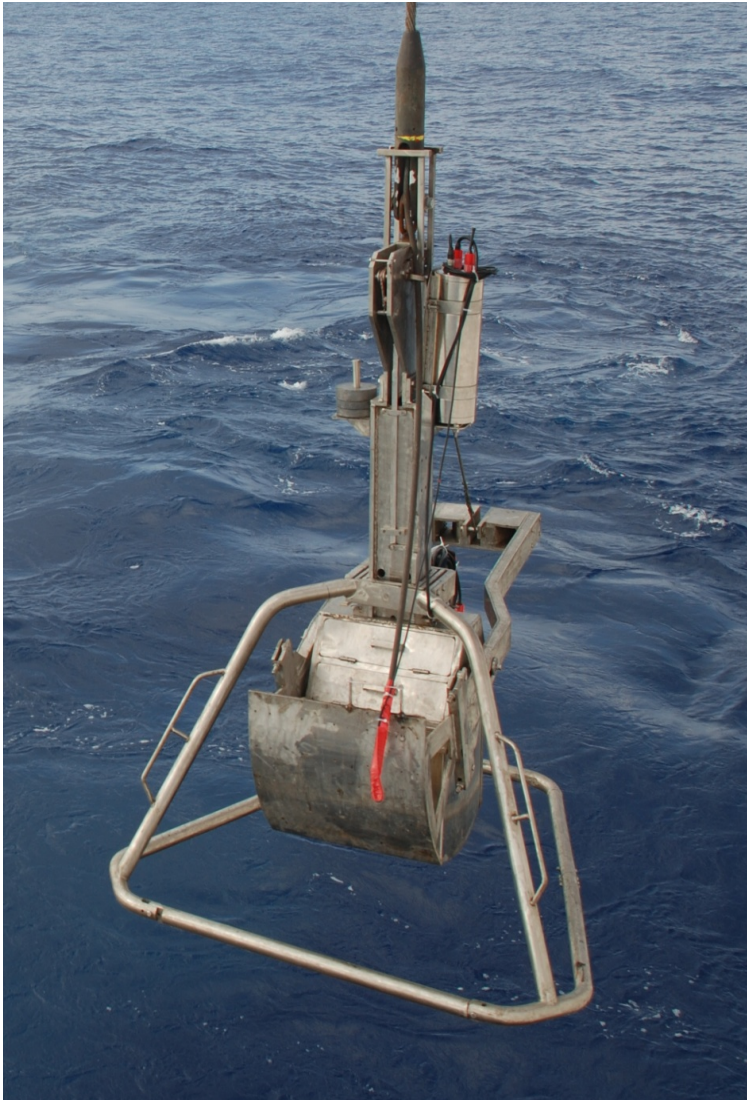




Cruise in 2013

0 125 250 500 Km

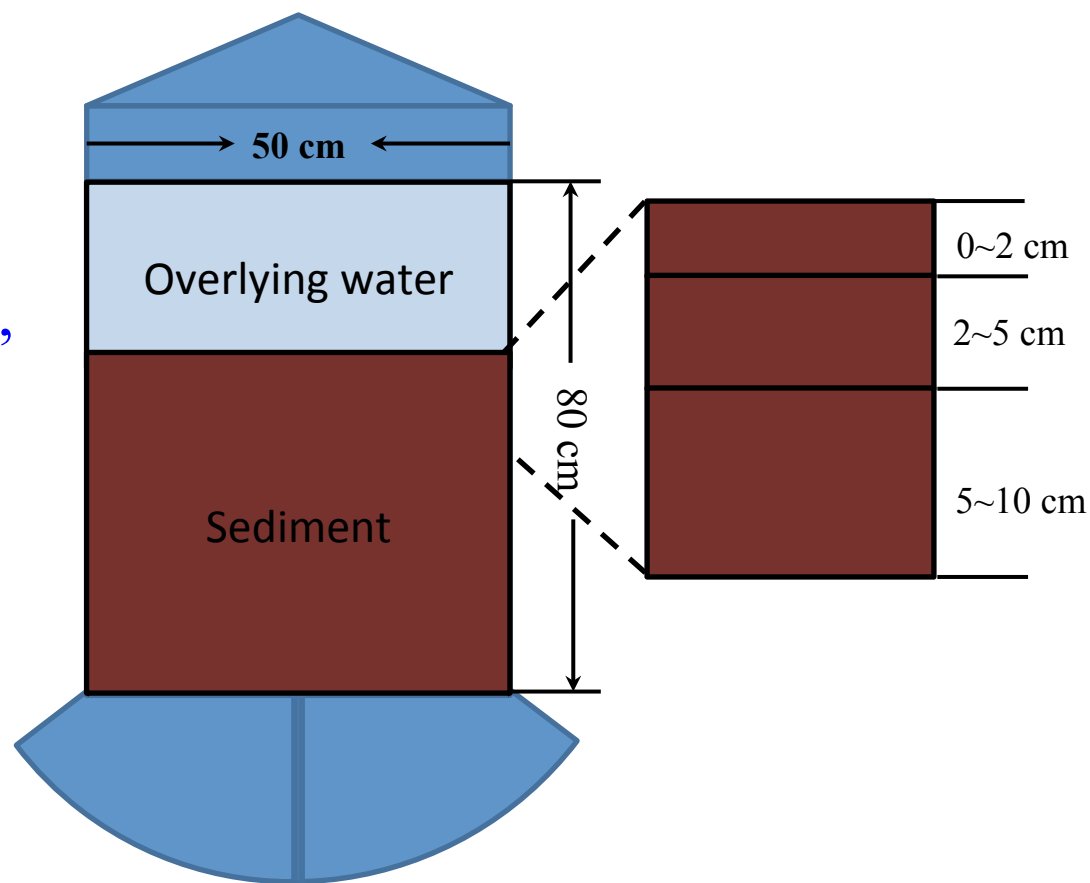
2. Sample collecting and processing methods



50 m/min

❖ Sample processing methods on board

- Area of Sample: 0.25m^2
- Sieve size: 0.25 mm
- Depth of sediment : 0-2cm, 2-5cm, 5-10cm
- Store method:
formalin or ethanol



✧ Sample processing methods in lab

- Sediment samples were further filtered through 0.25 mm sieve to concentrate.
- Dying samples with rose bengal.
- Identify samples under dissection microscope.
- Specimens were transferred to small containers and stored by formalin (ethanol) after primary identification

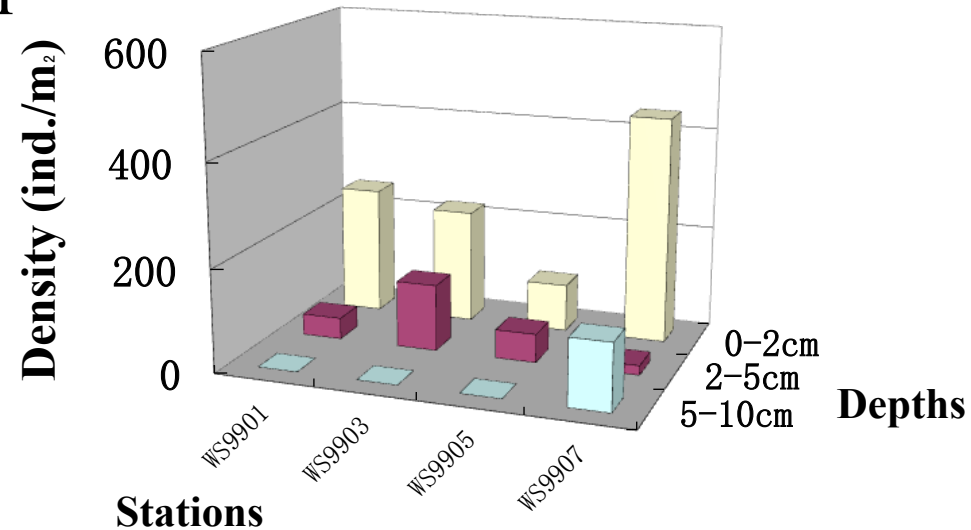
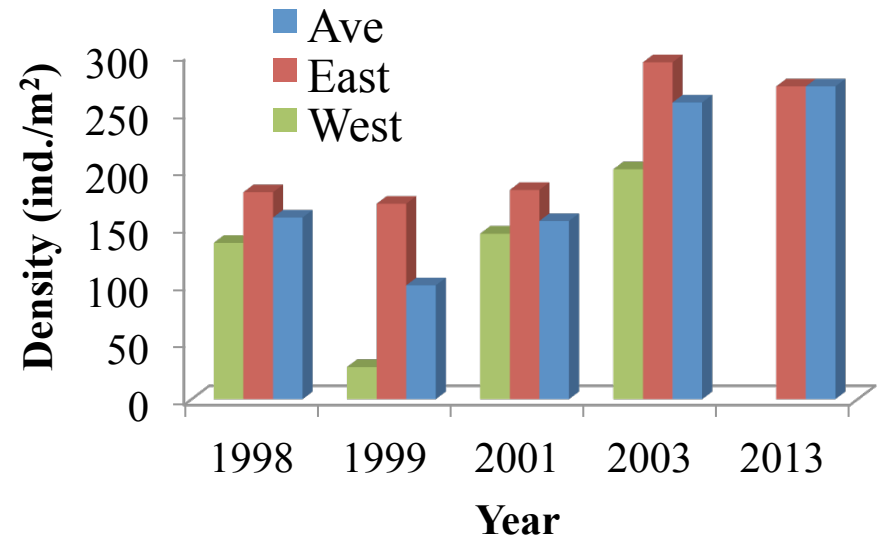


3. Results of benthic fauna in COMRA's contract area

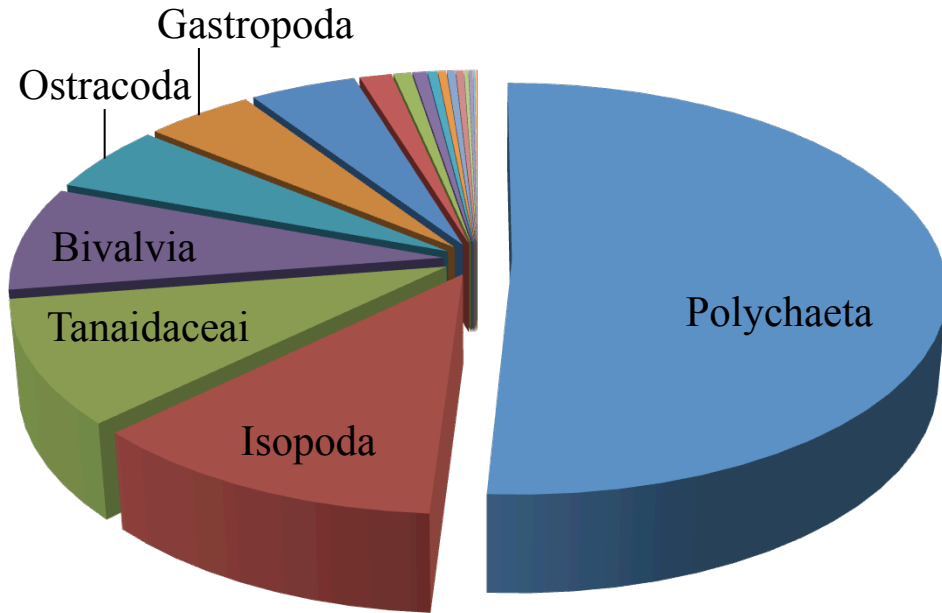


3.1 Macrofauna

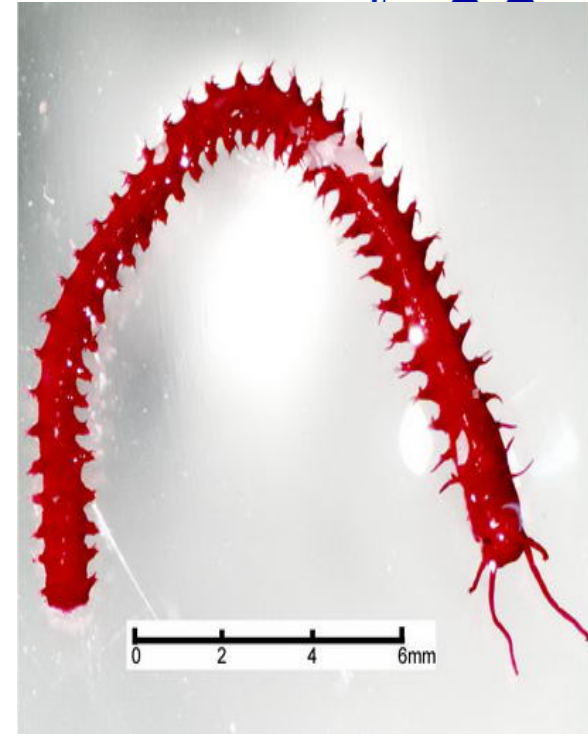
- Temporally: there maybe an interannual cycle of macrofauna density.
- Horizontally: density was higher in the east area than in the west area.
- Vertically: density decreased with the sediment depth.



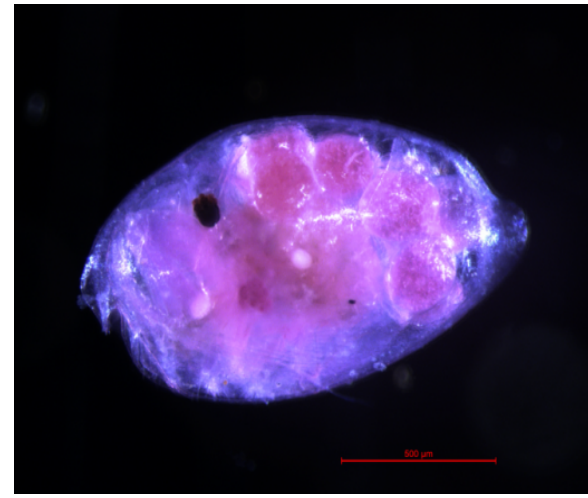
Community structure

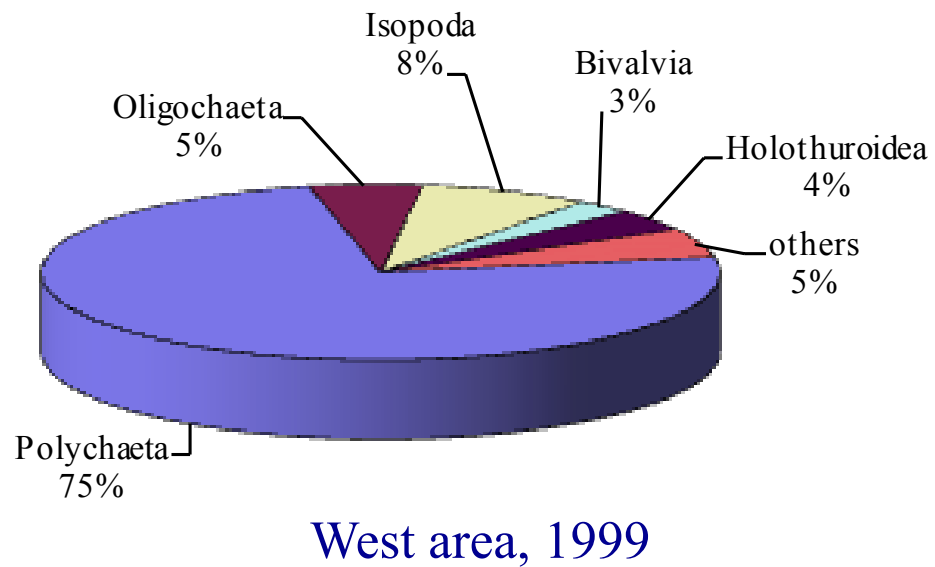
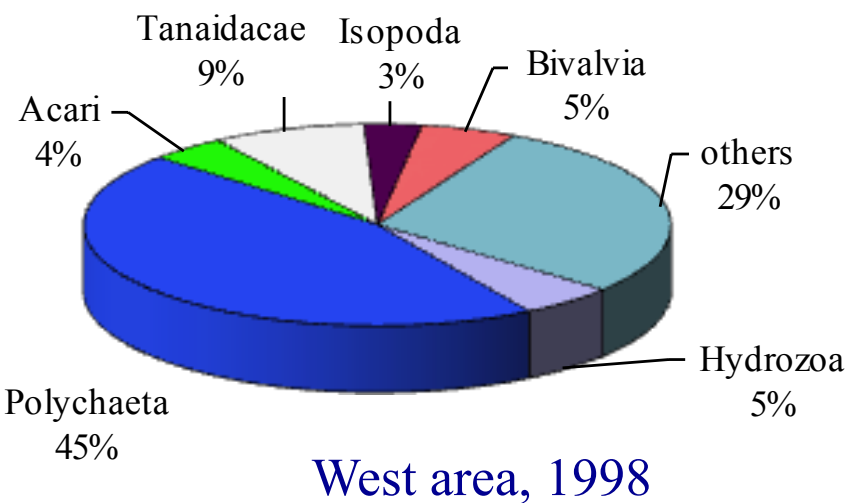
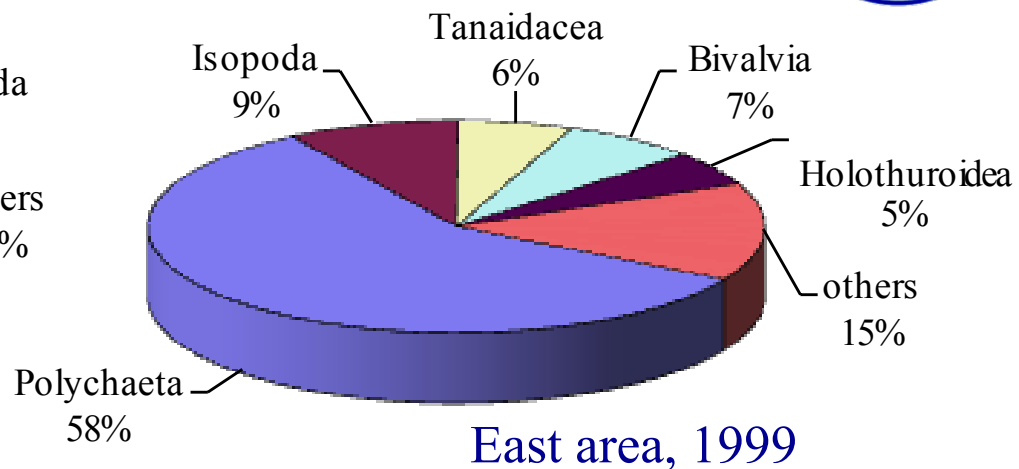
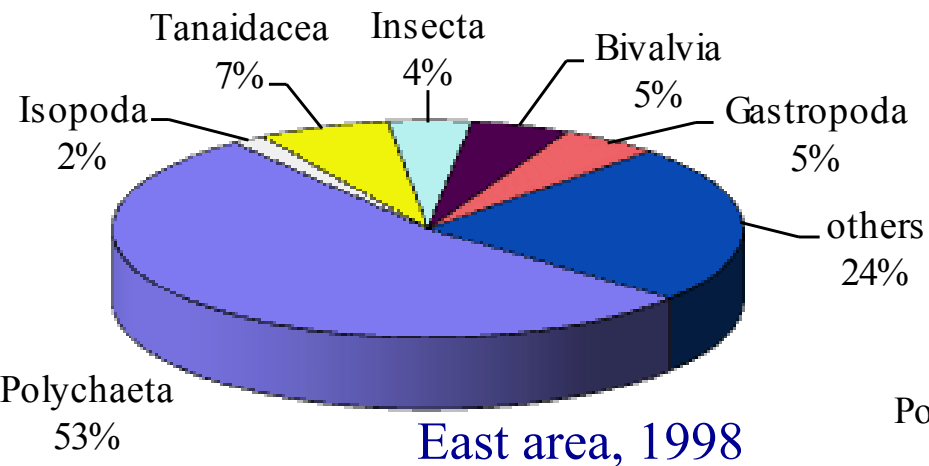


- Polychaeta
- Isopoda
- Tanaidaceai
- Bivalvia
- Ostracoda
- Gastropoda
- Indet.
- Ophiuroidea
- Insecta
- Cumacea
- Holothuroidea
- Oligochaeta
- Pisces
- Amphipoda
- Aplacophora
- Acari
- Bryozoa
- Decapoda



- **Sixteen** groups of macrofauna were identified in CCFZ.
- **Polychaeta, Isopoda, Tanaidaceai, Bivalvia, Ostracoda, Gastropoda** are dominated groups, contributed more than **90%** of macrofauna.



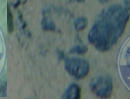
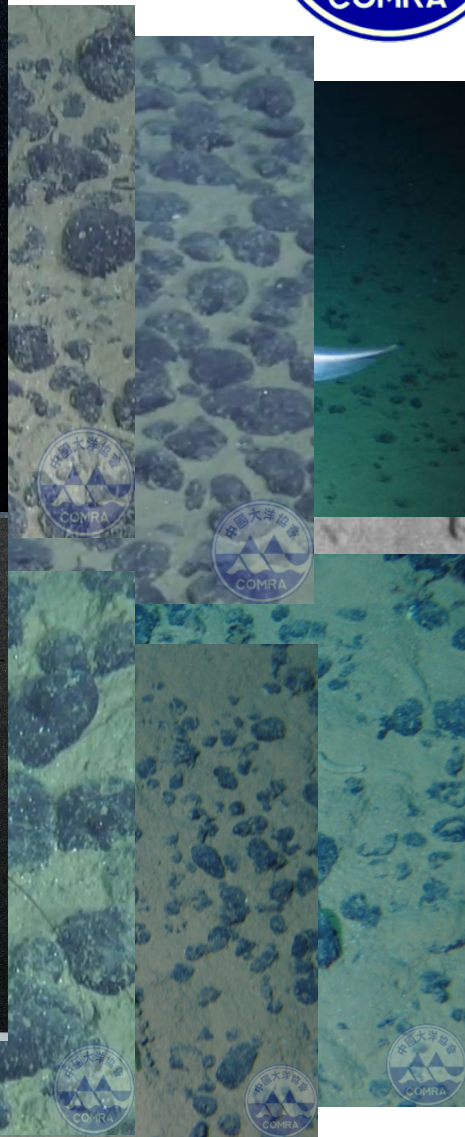
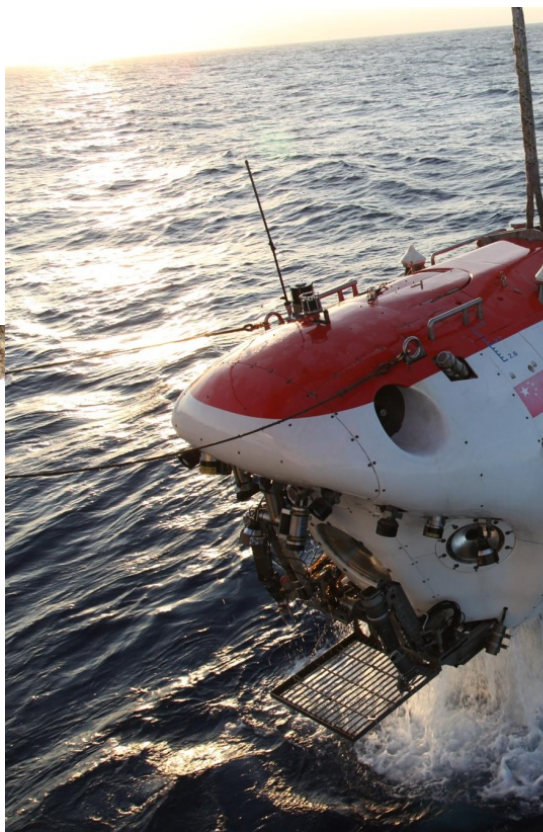


✧ Species list of Polychaeta

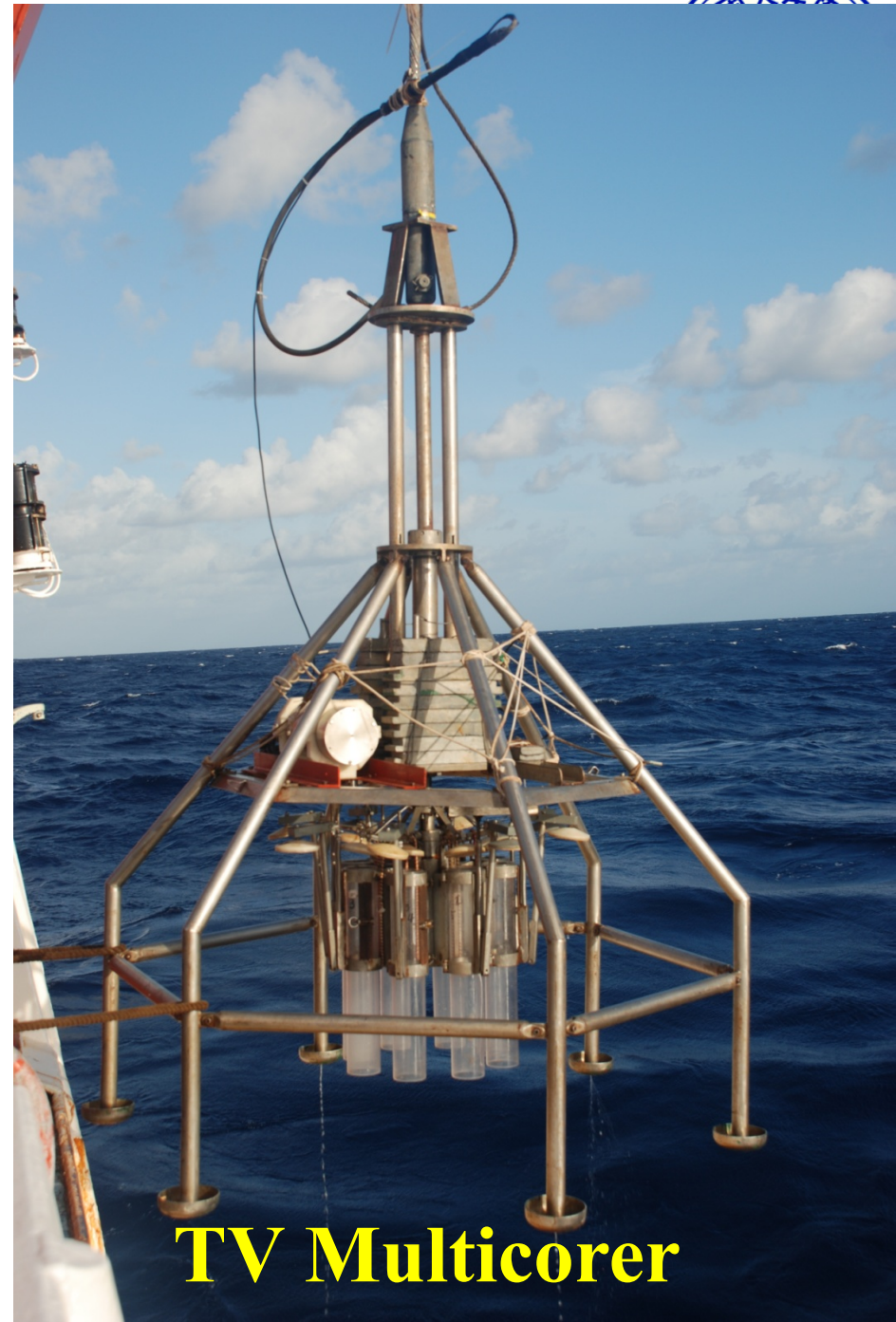


Families	Genera	Species	The eastern area	The western area
Capitellidae	Notomastus	<i>Notomastus</i> sp.	+	
Dorvilleidae	Dorvillea	<i>Dorvillea</i> sp.		+
Flabelligeridae	Brada	<i>Brada</i> sp.		+
Flabelligeridae	Flabelligera	<i>Flabelligera</i> sp.	+	
Glyceridae	Glycera	<i>Glycera capitata</i> Orsted, 1843	+	
Glyceridae	Glycera	<i>Glycera</i> sp.		+
Hesionidae		Hesionidae spp.	+	
Lumbrineridae	Ninoe	<i>Ninoe</i> sp.		+
Maldanidae		Maldanidae spp.	+	+
Nephtyidae	Aglaophamus	<i>Aglaophamus</i> sp.	+	+
Opheliidae	Ophelina	<i>Ophelina</i> sp.	+	
Orbiniidae	Orbiniella	<i>Orbiniella</i> sp.		+
Orbiniidae		Orbiniidae spp.	+	
Paralacydoniidae	Paralacydonia	<i>Paralacydonia</i> sp.		+
Paraonidae	Aricidea	<i>Aricidea</i> sp.	+	
Paraonidae	Paraonis	<i>Paraonis</i> sp.	+	+
Pilargidae	Sigambra	<i>Sigambra</i> sp.	+	
Pilargidae		Pilargidae spp.	+	
Spionidae	Prionospio	<i>Prionospio</i> sp.	+	
Spionidae		Spionidae spp.	+	+
Syllidae	Exogone	<i>Exogone</i> sp.	+	+

3.2 Megafauna



3.3 Meiofauna



TV Multicorer



4. Problems in Macrofauna study in deep sea

1. Lack of experts for morphological taxonomy

2. Sample collecting and processing methods standardization



1st COMRA's Advanced Training Workshop on Systematics of Deep-sea Benthos

- HKUST, HongKong
- 27th Apr – 10th May
- 9 trainees
- 2 instructors

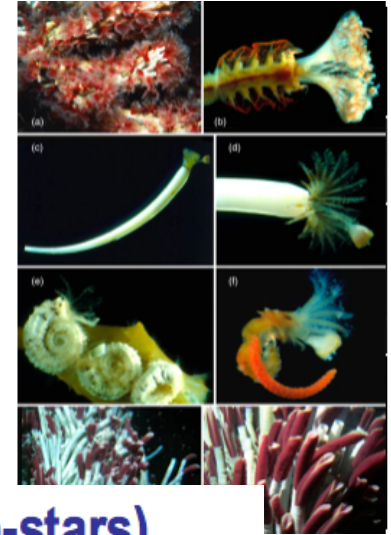


Annelida

Segmented worms

Around 20,000 species

Mostly marine. Familiar ones are earthworms and leeches. The rest are generally called polychaetes



Ophiuroids (Brittle-stars)



Clarkoma canaliculata (Sth Aust)



Amphiophiura confecta (Tasman Sea)



Ophiarachna incrassata (coral reefs)

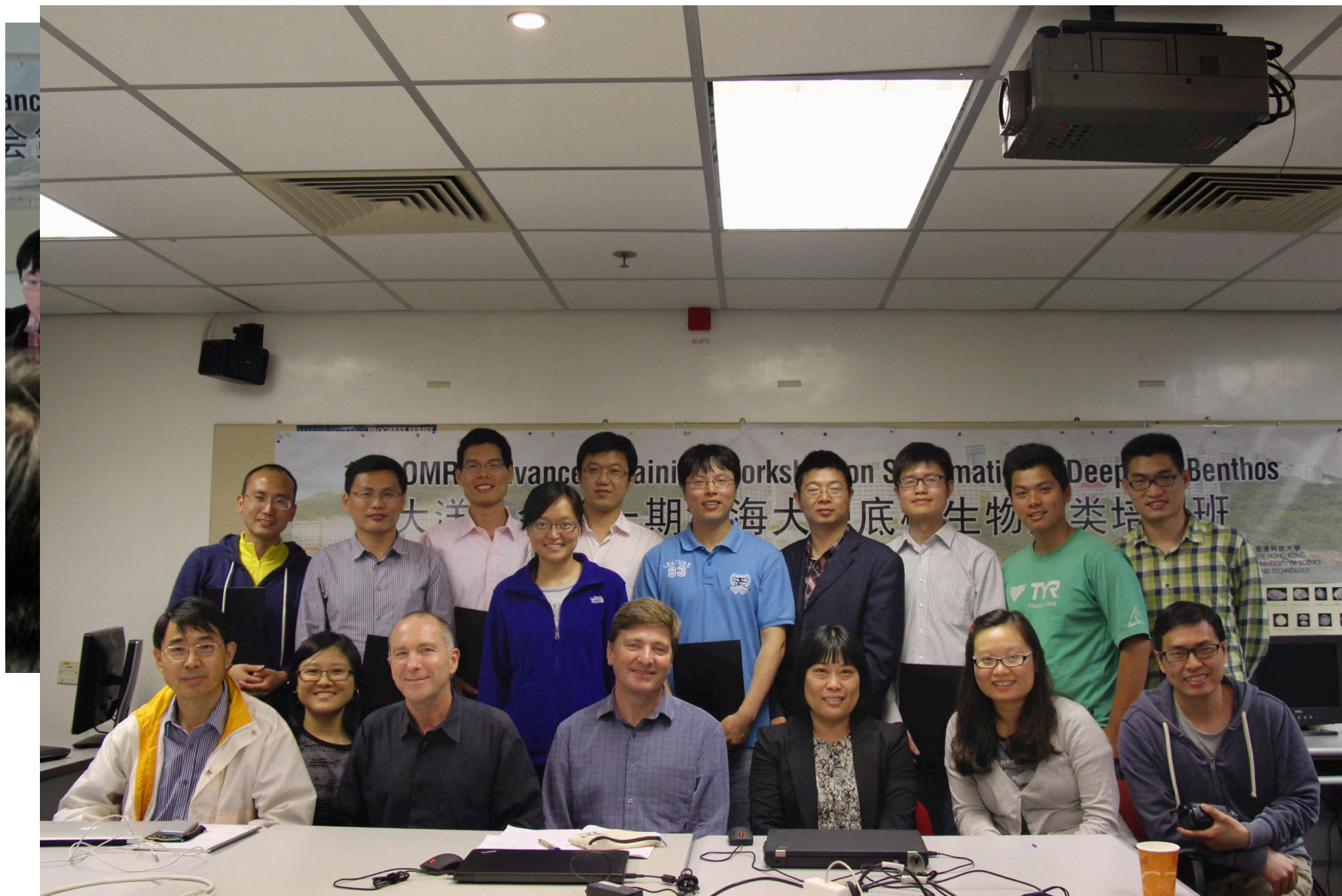


Conocladus australis (Sth Aust)



Ophiopsammus assimilis (Sth Aust)

The 1st COMRA Training Workshop





The 2nd training workshop in 2015 (in Planning)

- Planning date: before August, 15 days
- Organized by Prof. Qian Peiyuan, HKUST
- Chinese researchers & international researchers
- Looking forward cooperation with ISA



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Acknowledgements

International Seabed Authority
East Sea Research Institute, KIOST
All Experts

