

# Overview of polar exhibit tanks and List of the creatures in house

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## ● Exhibition area of “Arctic and Antarctic Oceans”



Fig. 1 Exhibition area

The Tokyo Sea Life Park has been exhibiting polar creatures since the aquarium opened in 1989. These exhibits have featured creatures from the Antarctic Ocean since 1989, and creatures from the Arctic Ocean since 1992. Exhibits include panels introducing the differences between the Arctic and Antarctic environments and their respective creatures, as well as showing how these creatures were collected, and the formalin specimen of *Dissostichus mawsoni*. There are three tanks. Two of these tanks measure 112 cm × 95 cm × 89 cm (volume: 0.8 m<sup>3</sup>). The other tank measures 157 cm × 95 cm × 89 cm (volume: 0.7 m<sup>3</sup>). The latter tank can be divided into three parts due to the exhibition of small creatures.



Fig. 2 “Arctic Sea 1” Tank

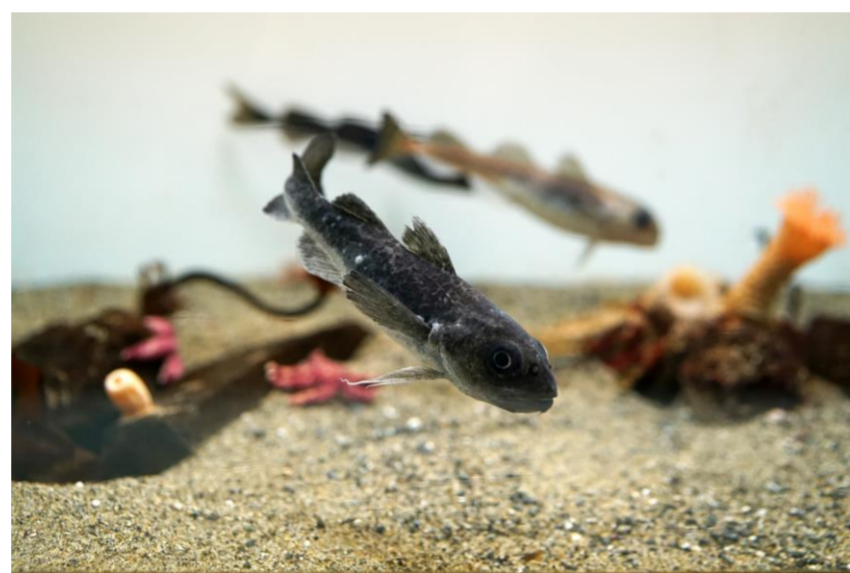


Fig. 3 “Arctic Sea 2” Tank

### The first and second Arctic Ocean tanks

The first tank is an exhibit focused on introducing invertebrates such as the *Psolus fabricii* and *Lebbeus polaris*.

The second tank is an exhibit focused on *Boreogadus saida*, which can be found throughout the Arctic Ocean and which helps support the Arctic ecosystem.



Fig. 4 “Antarctic Ocean 1” Tank

### The first Antarctic Ocean tank “Clumps of submerged drifting algae”

In the Antarctic Ocean, it takes a long time for broken up seaweed to decompose because the seawater is so cold. The clumps of submerged drifting algae are home to all sorts of creatures. For example, *Glyptonotus antarcticus* and small fish of Nototheniidae use those as a place to hide or find food.



Fig. 5 “Antarctic Ocean 2” Tank

### The second Antarctic Ocean tank “Nototheniidae”

Many creatures living in polar regions have antifreeze proteins in their body. This includes Nototheniidae, a significant fish family in Antarctic regions. Nototheniidae possess antifreeze glycopeptide to prevent the formation of ice crystals in their bodily fluids.

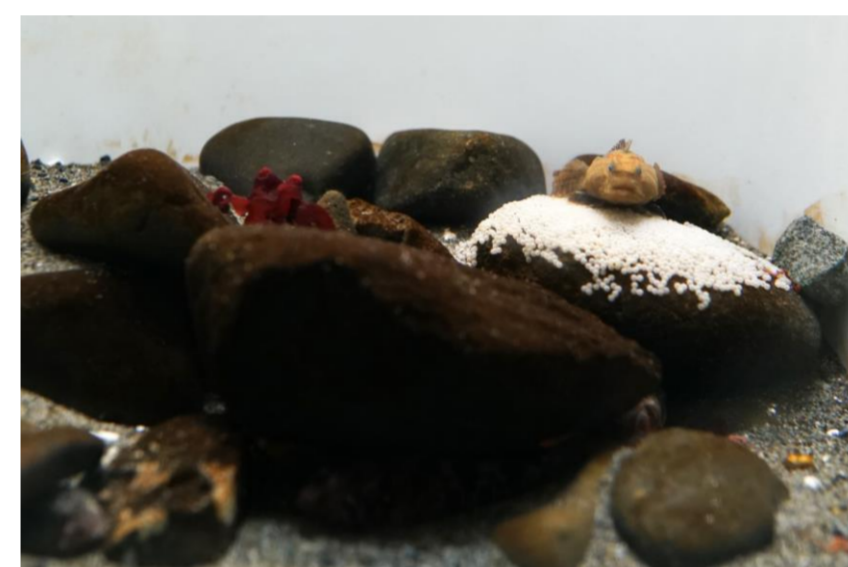


Fig. 6 “Antarctic Ocean 3” Tank

### The third Antarctic Ocean tank “Rocky bottom”

There are small creatures that use pebbles and stones as their hideouts. These include *Harpagifer antarcticus* and *Trematomus newnesi*. *H. antarcticus* sometimes lay their eggs here and egg-guarding for four months until they hatch.

## ● List of Creatures in House

Sixty-nine fish from 15 different species and 678 invertebrates from 26 different species are reared in the exhibition tanks and the holding tanks.

Table. 1 List of fish

Scientific name / Generic name	quantity
<i>Boreogadus saida</i> / Arctic cod	8
<i>Lepidonotothen nudifrons</i> / gaudy notothen	3
<i>Notothenia coriiceps</i> / Antarctic bullhead notothen	3
<i>Pagothenia borchgrevinki</i> / bald notothen	4
<i>Trematomus bernacchii</i> / emerald notothen	3
<i>Trematomus hansonii</i> / striped notothen	6
<i>Trematomus newnesi</i> / dusky notothen	8
<i>Harpagifer antarcticus</i> / Antarctic spiny plunderfish	13
<i>Gymnocanthus tricuspis</i> / Arctic staghorn sculpin	8
<i>Icelus bicornis</i> / twohorn sculpin	2
<i>Myoxocephalus scorpius</i> / shorthorn sculpin	3
<i>Eumicrotremus spinosus</i> / Atlantic spiny lumpsucker	1
<i>Gymnelus hemifasciatus</i> / halfbarred pout	2
<i>Gymnelus viridis</i> / fish doctor	2
<i>Lycodes mucosus</i> / saddled eelpout	3

Although precious creatures are reared here, many species have not been researched enough to reveal their ecology. We hope to cooperate with research of polar regions, including rearing experiment and provision specimens.

Table. 2 List of Invertebrates

	Scientific name / Generic name	quantity
Porifera	<i>Sphaerotylus antarcticus</i> / -	2
	<i>Lafoeina cf. maxima</i> / -	1
	<i>Gersemia rubiformis</i> / red soft coral	2
Cnidaria	<i>Cribrinopsis cf. similis</i> / Arctic crimson anemone	1
	<i>Hormathia nodosa</i> / rugose anemone	3
	<i>Urticinopsis antarctica</i> / -	9
Nemertea	<i>Parborlasia corrugatus</i> / -	18
	<i>Nacella concinna</i> / Antarctic limpet	16
Mollusca	<i>Margarella antarctica</i> / -	3
	<i>Neobuccinum eatoni</i> / -	105
	<i>Glyptonotus antarcticus</i> / -	330
Arthropod	Serolidae sp. / -	55
	<i>Lebbeus polaris</i> / polar shrimp	5
	<i>Ophiocten sericeum</i> / -	10
	<i>Ophiura sarsii</i> / -	3
	<i>Crossaster papposus</i> / Common sunstar	2
	<i>Odontaster validus</i> / -	22
	<i>Diplasterias brucei</i> / -	3
Echinodermata	<i>Granaster nutrix</i> / -	7
	<i>Leptasterias polaris</i> / knobby six-rayed sea star	11
	<i>Sterechinus neumayeri</i> / -	14
	<i>Cladodactyla sicinski</i> / -	5
	<i>Cucumaria frondosa</i> / orange footed sea cucumber	12
	<i>Psolus fabricii</i> / scarlet psolus	37
	<i>Pyura bouvetensis</i> / -	1
Chordata	Ascidiacea sp. / -	1

## ● Organisms that have been observed breeding

### ○ *Notothenia coriiceps*

Currently the eggs are kept in a tank. They were laid on October 22, 2019. The eggs were laid on January 29, 2019 and hatched on May 9. However, despite attempts at raising fry, all larval fish died within 44 days after hatching.

### ○ *Harpagifer antarcticus*

Currently raising fry. Eggs were laid on July 2, 2019, and hatched on September 23. Besides, another eggs are kept in a tank. They were laid on August 31, 2019.

### ○ *Icelus bicornis*

Although it frequently lays eggs, none have been observed hatching. It is possible that the eggs are unfertilized.

### ○ *Margarella antarctica*

Although eggs have been observed being laid, no larvae have hatched.

### ○ *Neobuccinum eatoni*

Breeding has been observed in the rearing tank.

### ○ *Glyptonotus antarcticus*

Offspring were observed on January 1, 2017 and June 17, 2019. Both of these are thought to be the offspring of creatures collected from the wild. Offspring from 2017 have matured and have been observed mating.

### ○ Serolidae sp.

Breeding has been observed in the rearing tank. Fifteen specimens each were collected from the wild in February 2016 and January 2018. At least 25 new creatures have been bred.

### ○ *Granaster nutrix*

Breeding has been observed in the rearing tank.

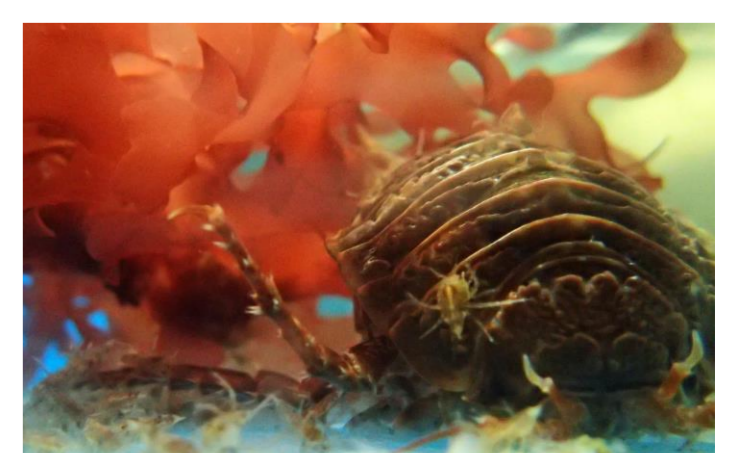


Fig. 7 Adult and larvae of *G. antarcticus*

In order to reduce the collection of new creatures from the wild, we aim to establish reliable rearing and breeding technology.