

# Long-established marine lab on the youngest sea on earth



Alexander Tzetlin





## ▶ The White Sea



**Square:** about 90 000 km<sup>2</sup>

**Coastal line:** circa 5000 km

**Maximal depth:** – 350 m,

**Salinity:** from 24 ‰ on the surface to 34 ‰ on the depths more than 100 m

**Water temperature in Summer :**  
about 15 ° C (surface), about -1,5 ° C on the depths more than 100 m

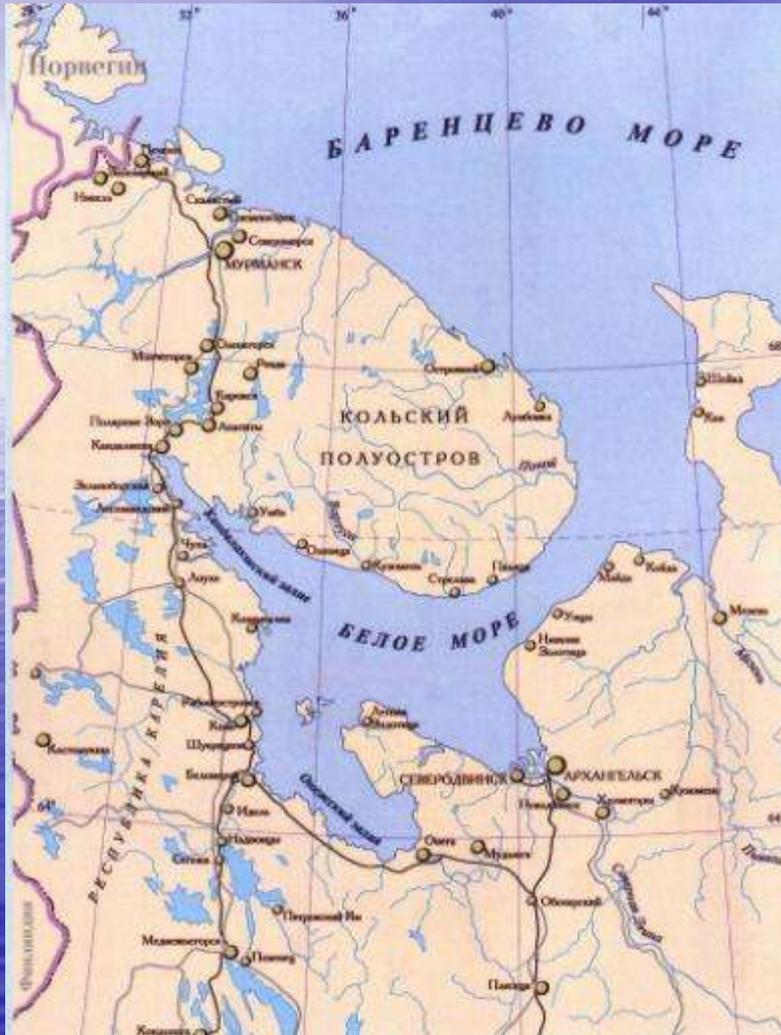
**Ice conditions:** from late November to the middle of May

**Tides:** in different part of the Sea  
from 1,5 m to 6 m,  
in the area of the WSBS – about 2 m.

**Age** – recent ecosystem of the White Sea  
exists since the end of last glacial epoch  
not more than 12 000 years



- In the White Sea were found about 40% of the species known for the Barents Sea.
- Possible reasons: low salinity, small size of the basin, a narrow strait in the mouth of the White Sea that could be a barrier for pelagic larvae, and finally just the very short time of existence.
- Although a great variety of underwater landscapes and tidal condition gives enough material for successful work.





# Nikolai Pertsov White Sea Biological Station of Moscow State University (WSBS) [www.wsbs-msu.ru](http://www.wsbs-msu.ru)



**Locality.** The station is situated on the coast of Kandalaksha Bay of the White Sea (66° 34' N, 33° 08' E), 21 hours by train from St. Petersburg (about 1000 km), 36 hours from Moscow, 8 hrs by train from Murmansk (350 km)

**WSBS** is an isolated settlement. There is no road. Communication to nearest village Poyakonda (a railway station) is possible by boats in Summer time and by snow-mobiles in Winter (15 km)



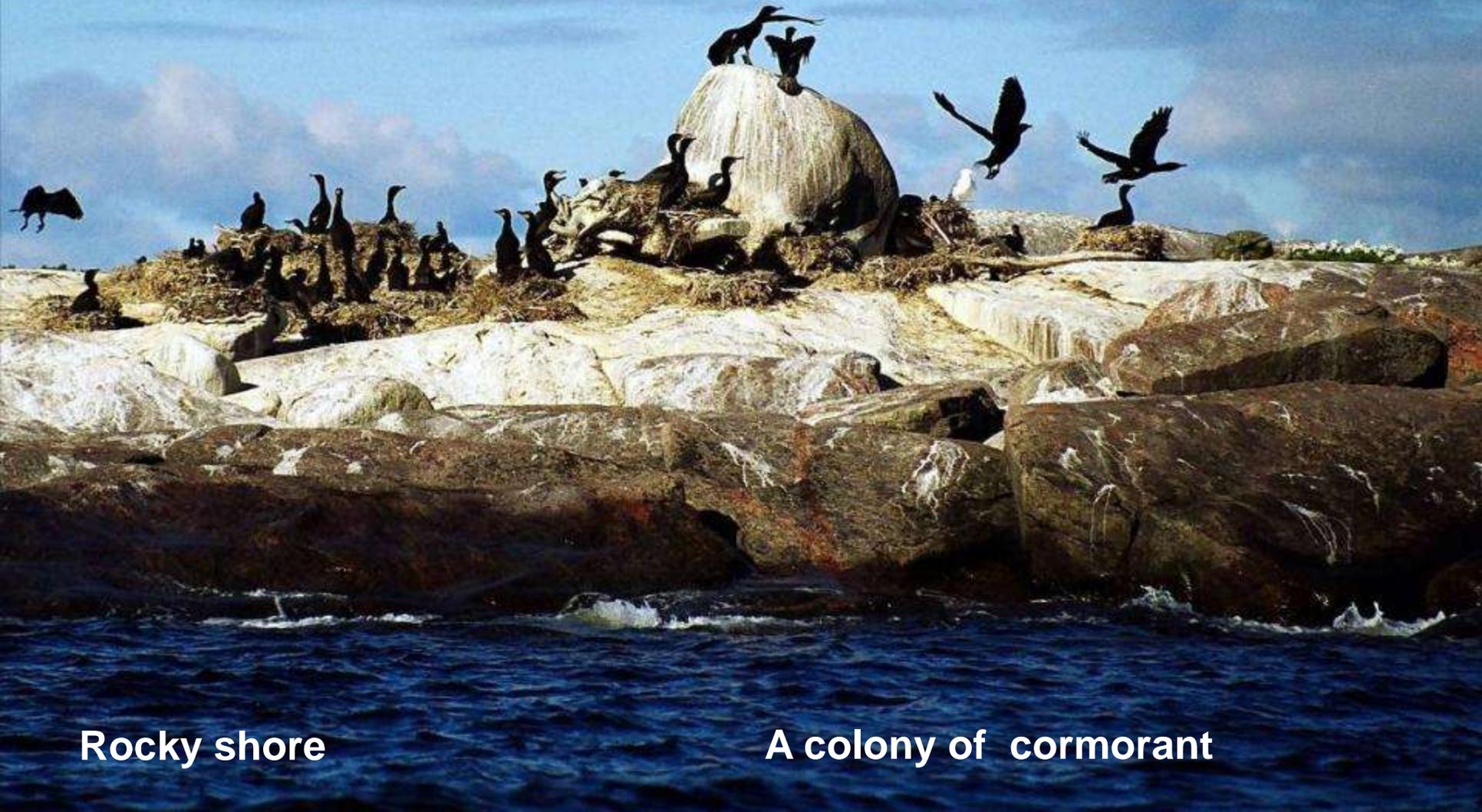
WSBS is situated on the Cape Kindo peninsula on the shore of Velikaja Salma Bay. Cape Kindo is a piece of untouched northern taiga, wetlands and small lakes. Along the shore there are some grass meadows.

The whole territory of Cape Kindo is included to large local nature park "Polarny Krug". Veliky Island, the largest island of the Kandalaksha State Nature Reserve is on the opposite side of the 500 m strait.



**Velikaja Salma Bay is characterized by an especially rich fauna and flora, which is in part a result of the strong tidal currents that form in the narrow straits. These currents prevent the formation of the ice in several particular sites and make it possible for research activities to be continued throughout the year**





**Rocky shore**

**A colony of cormorant**



# Neolithic monuments





Traditional style of life and traditional coastal fishery are still common in the coastal villages

**The station was founded by a group of biologists from the university in 1938. One of the original members of this group, Nikolai Pertsov (1924- 1987), devoted his whole life to building the station and became director in 1951. The station took his name in 1995 after his death.**

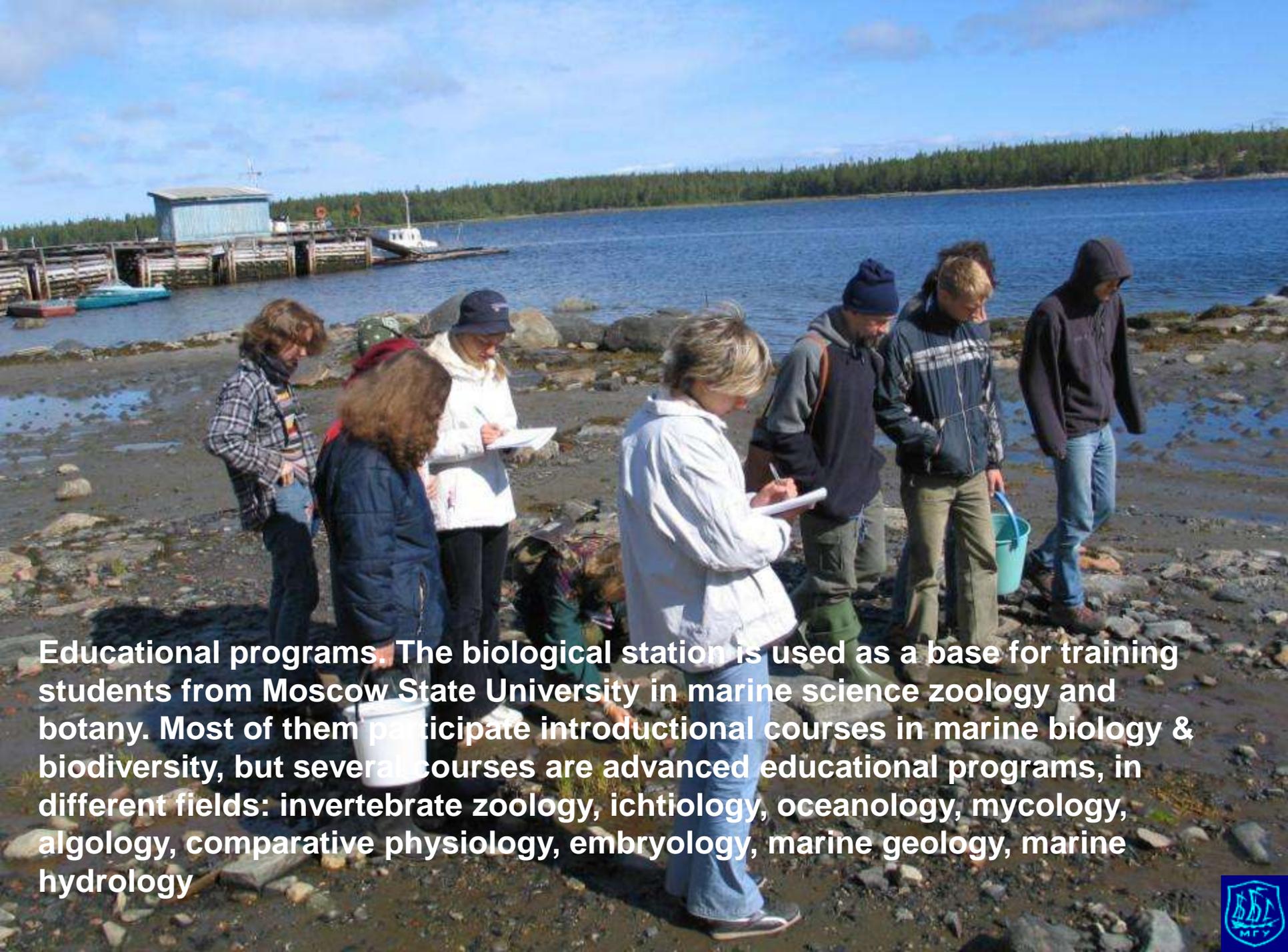
**Recently, about 600 students, teachers and visiting scientists work at the station every year. The station provides guest scientists and students with basic scientific equipment, optical instruments and some other devices. The housing and laboratory facilities at the station can accommodate, simultaneously, up to 180 students and researchers in the summer period (from the end of May to the end of September).**

**Few persons could be accommodated at the station in winter time. Guests are provided with rooms for 1, 2, 4 or 6 persons. The station has a wooden bathhouse. The dining-hall works for the summer months only.**



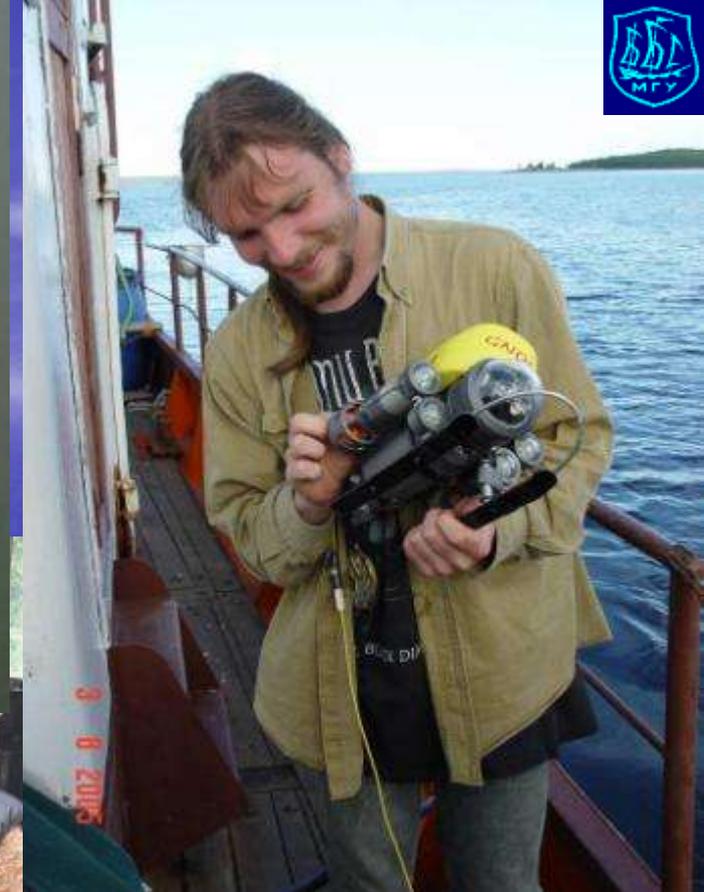






**Educational programs.** The biological station is used as a base for training students from Moscow State University in marine science zoology and botany. Most of them participate introductory courses in marine biology & biodiversity, but several courses are advanced educational programs, in different fields: invertebrate zoology, ichthyology, oceanology, mycology, algology, comparative physiology, embryology, marine geology, marine hydrology

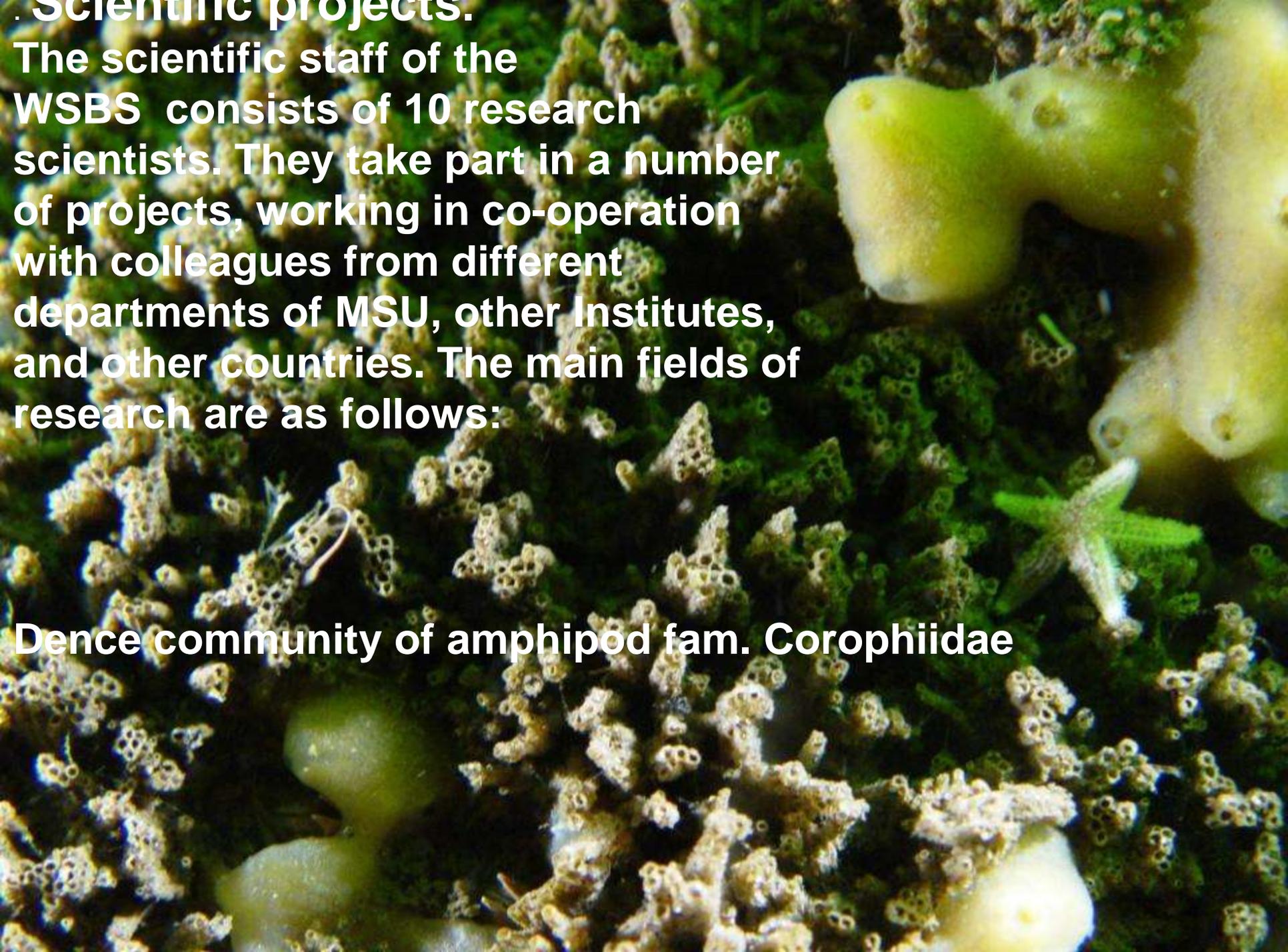




**. Scientific projects.**

**The scientific staff of the WSBS consists of 10 research scientists. They take part in a number of projects, working in co-operation with colleagues from different departments of MSU, other Institutes, and other countries. The main fields of research are as follows:**

**Dence community of amphipod fam. Corophiidae**

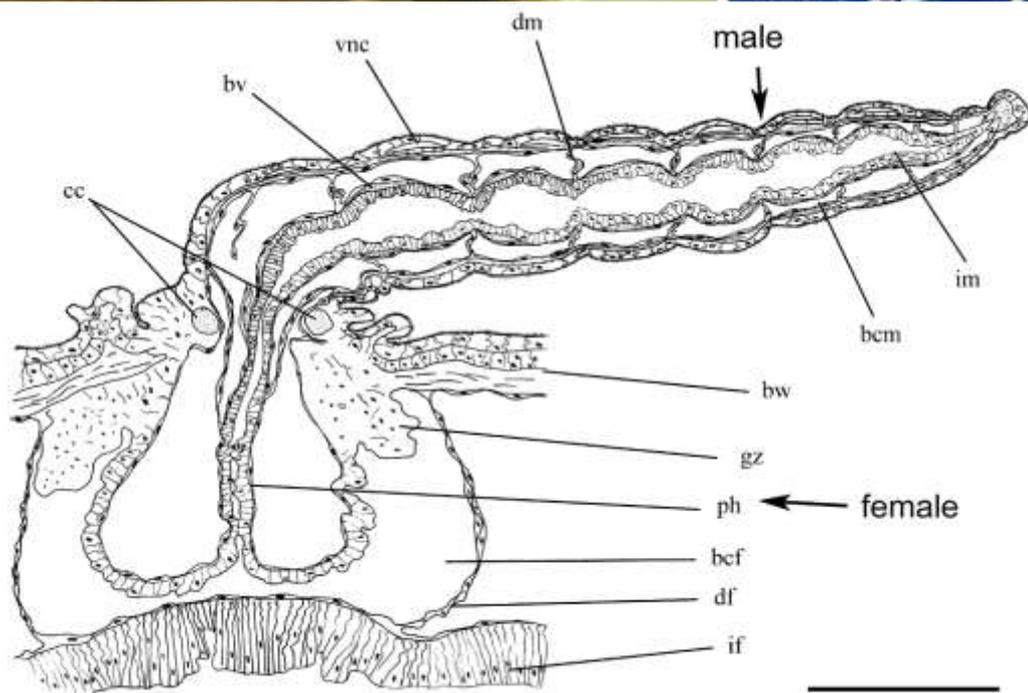
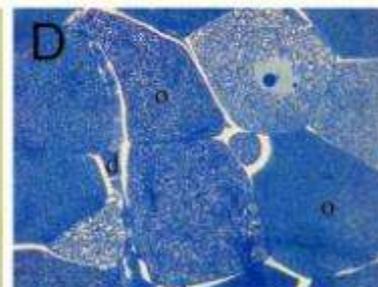
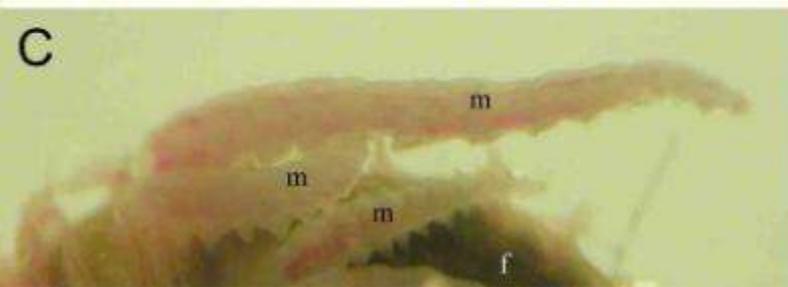
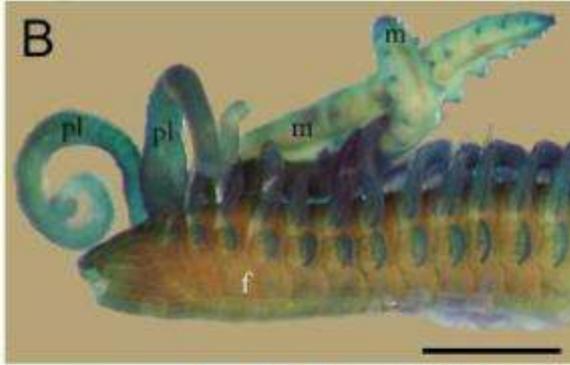
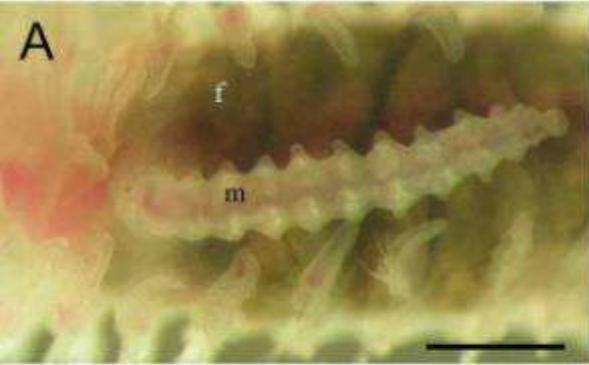


1. Symbiotic photosynthetic bacteria in the tissues of Hydrozoa (Sertulariida) Project leader Dr. Igor Kasevich
2. Investigation of the biology of underwater mast builders - amphipods, g. *Dulichia*  
Project leaders Dr. Anna Zhadan, Alexander Tzetlin



Family of *Dulichia*  
on the masts

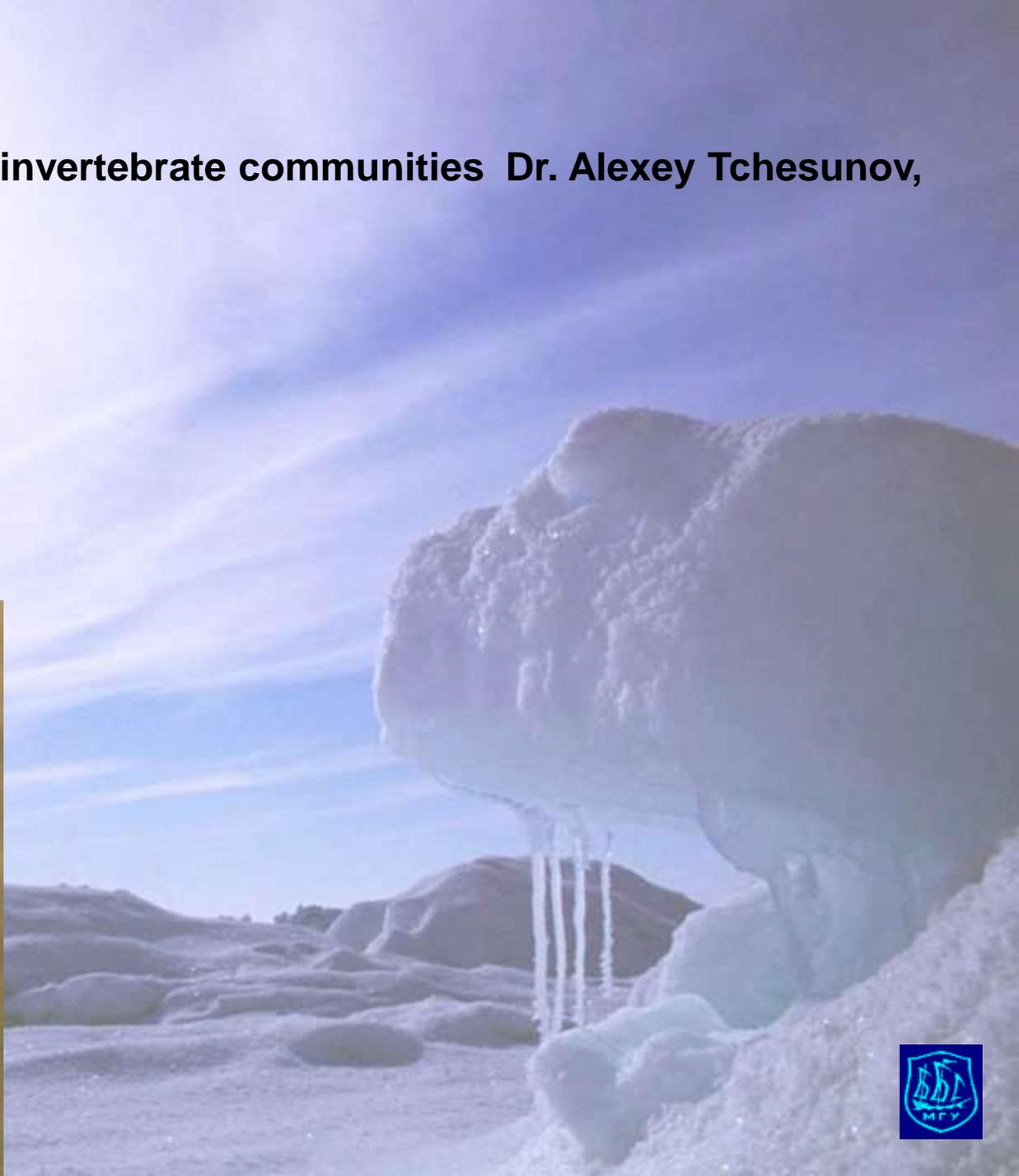




3. A study of first case of obligate ectoparasitic dwarf males found in polychaetes (*Scolelepis laoncola*), Dr. Elena Vortsepneva et al.



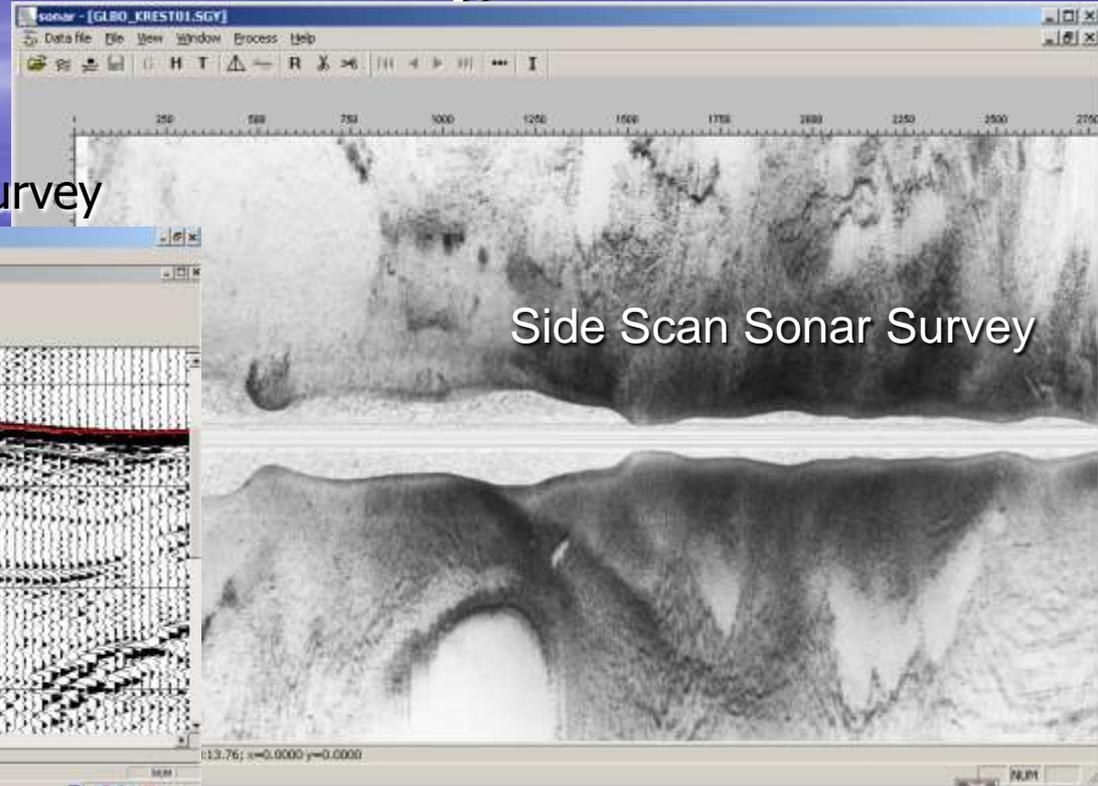
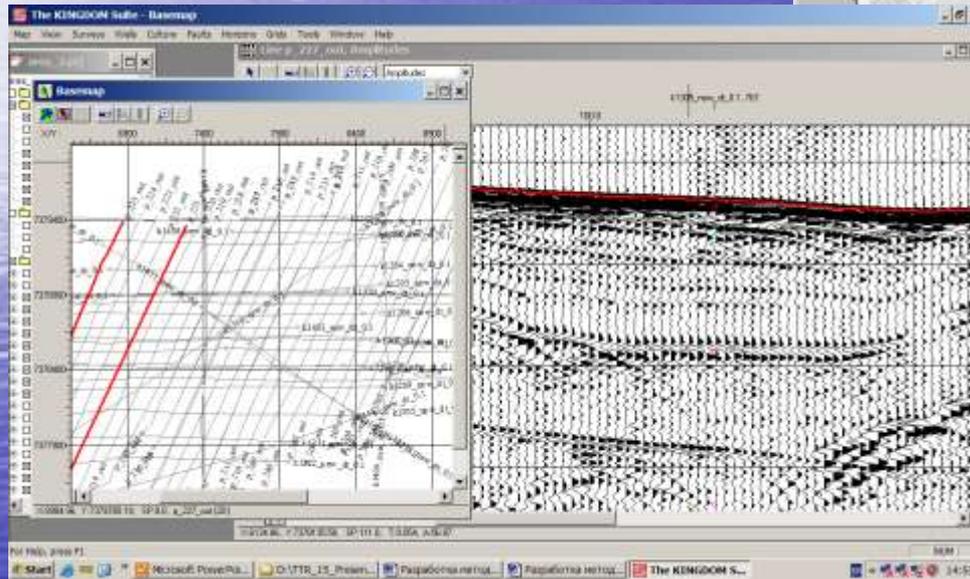
**4. A study of marine ice invertebrate communities Dr. Alexey Tchesunov,  
Dr. Vadim Mokiiewsky**



# 5. Development of sea floor landscape mapping techniques utilizing remote geophysical methods and traditional geological and biological sampling methods. A case of seafloor communities of the Kandalaksha Bay, White Sea

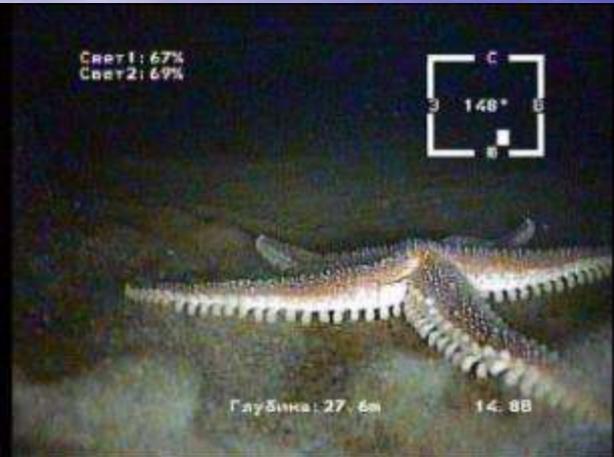


High resolution seismic survey



Side Scan Sonar Survey

- V.O.Mokievsky (1), V.A.Spiridonov, (1), M.Yu.Tokarev (2)\*, A.B.Tzetlin (3)**  
**(1) - Laboratory of ecology of littoral bottom communities., Shirshov Oceanology Institute, Russian Academy of Science**  
**(2) - Faculty of Geology, Lomonosov Moscow State University**  
**(3) - Faculty of Biology, White Sea Biology Station of Lomonosov Moscow State University**



Underwater photo and video

## 6. Unique crustaceans of the White Sea

### Rhizocephala – the crafty barnacle parasites of other crastaceans

G.A. Kolbasov

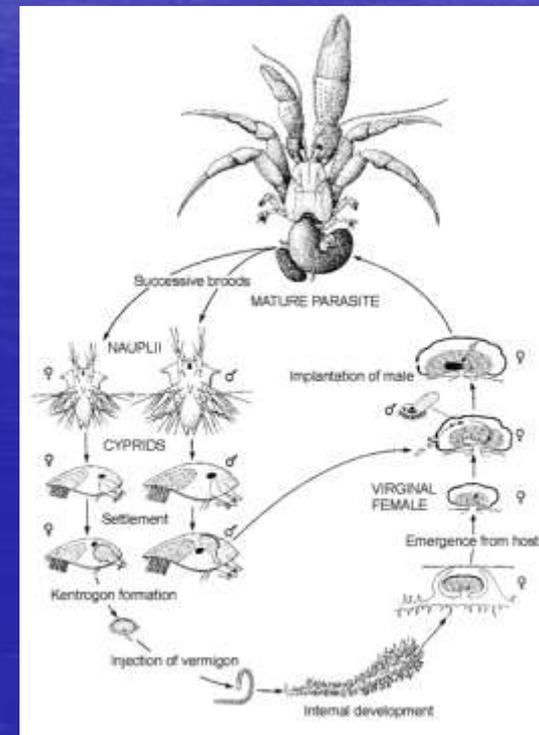


Have a complex life circle,  
and very nasty parasites....

Because the host thinks it is pregnant!



- Emulate the egg mass of the female
- And induces it to care for the parasite
- Males are morphologically and behaviorally feminized
- Both male and female host are sterilized, but not killed
- Whence the crab becomes a mere robot fully controlled by the parasite!



# Unique crustaceans of the White Sea

## Facetotecta – enigmatic Y larvae

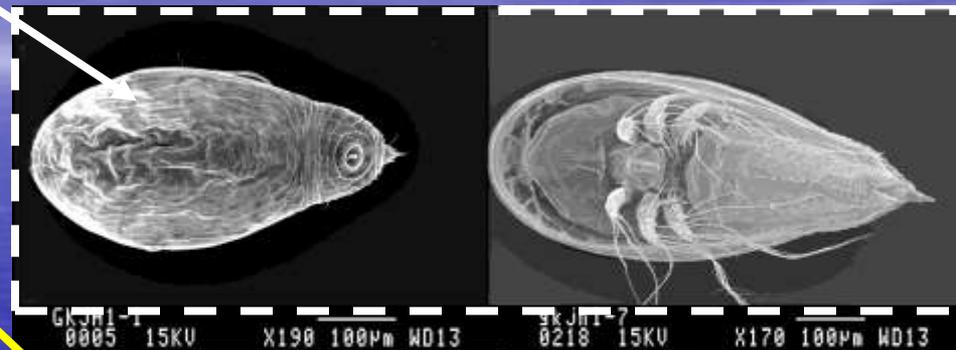
G.A. Kolbasov



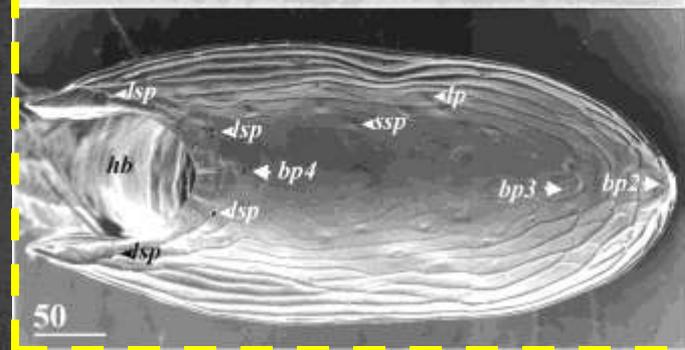
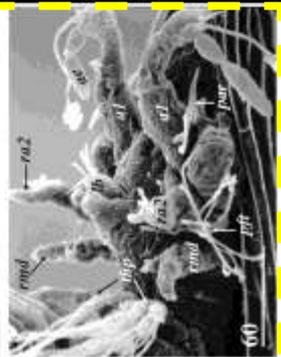
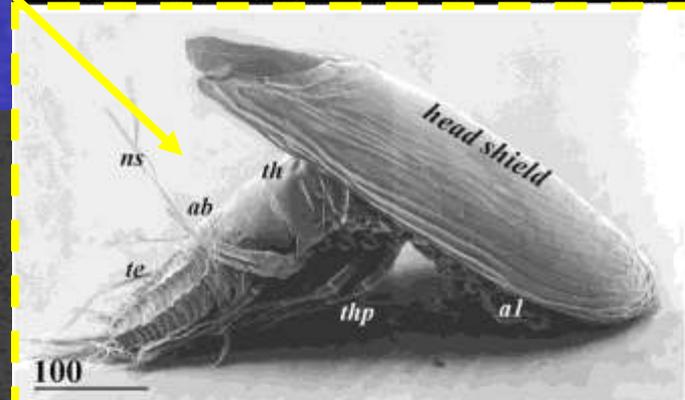
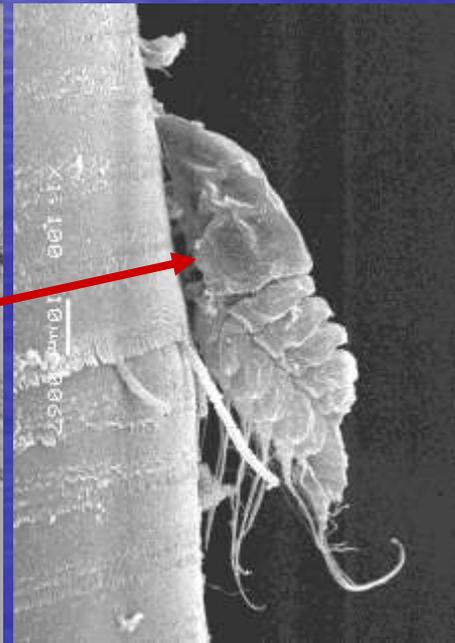
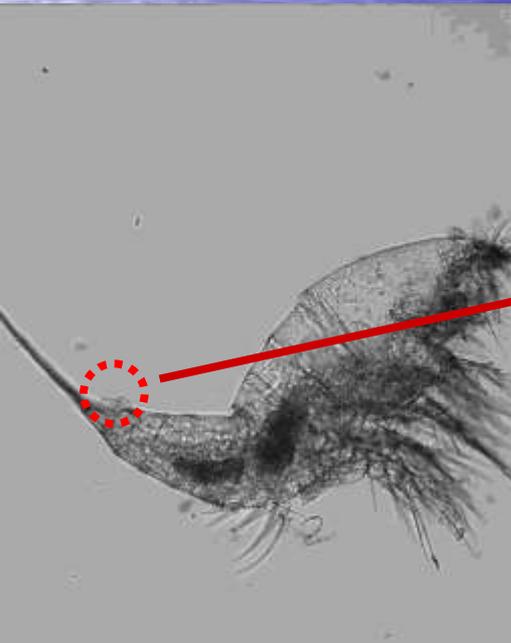
Five planktonic naupliar instars, having a morphology similar to that in the Cirripedia, but lack fronto-lateral horns and equipped with dorsal cuticular ridges

Then, planktonic cypris larva...

And that is all, because adults are unknown



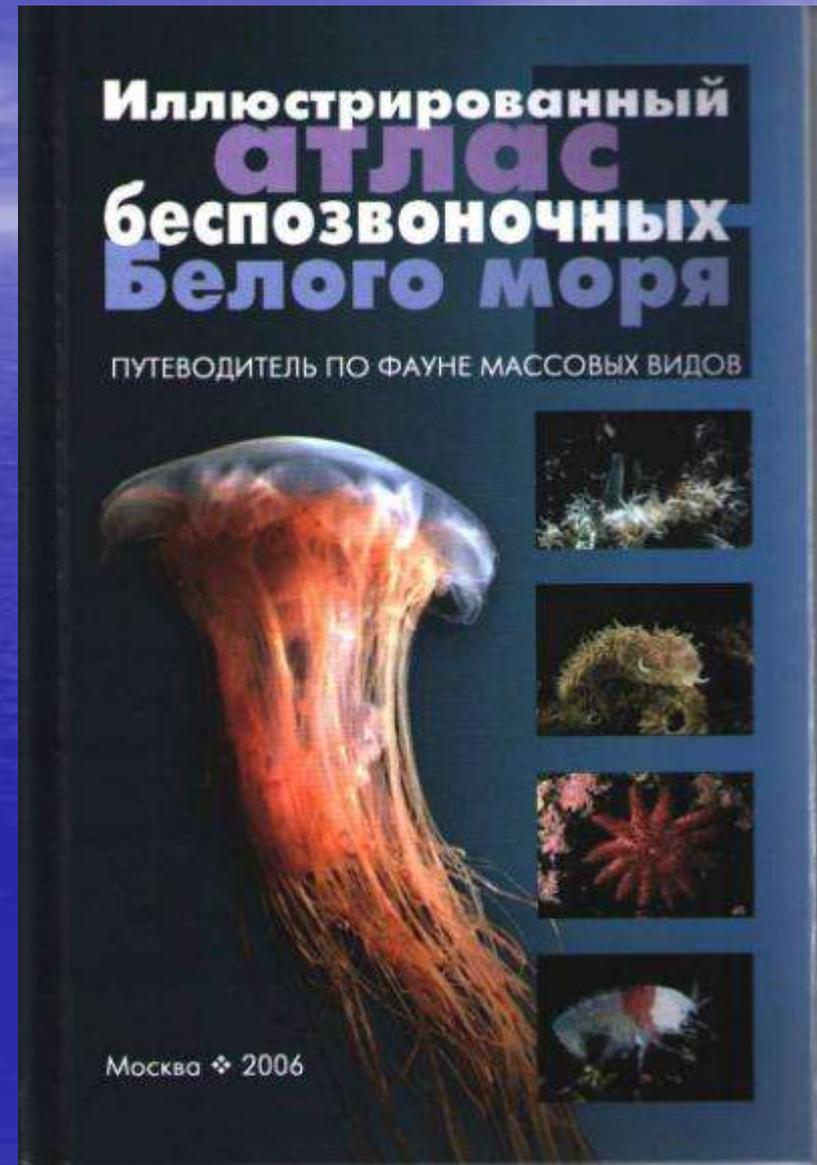
Yet there are the parasites of the class Tantulocarida – the smallest crustaceans, without traditional molts and mouth appendages



- 7. Annotated list of flora and fauna, found in the vicinities of the station ( more then 5000 species from plants, protozoans, algae and fungi to birds and mammals) Project leader Dr. Alexey Tchesunov**
  
- 8. The database (GIS) Marine flora and fauna of the vicinities of the station.  
Project leaders Anna Zhadan & Elena Vortsepneva**



9. Illustrated key for most abundant invertebrates of the White Sea with description of biology and distribution of few hundreds invertebrate species is just published. This book includes hundred of photos specially made by Svetlana Belorustseva and few other professional photographers.. Project leader Dr. Nikolai Marfenin (just pulished)



# 10. Monitoring sea mammal populations in the Kandalaksha Bay (project supported by IFAW)



**11. Integrated coastal zone management project: .**  
**Basin Council of North Karelian Coast ([www.whitesea.onego.ru](http://www.whitesea.onego.ru))**  
**In co-operation with:**  
**Lighthouse Foundation,**  
**IFAW,**  
**WWF Russia**  
**Biodiversity Conservation Center Russia**



Welcome to WSBS!

