

Megafauna of the Bering Sea slope based on observations and imaging from ROV “Comanche”

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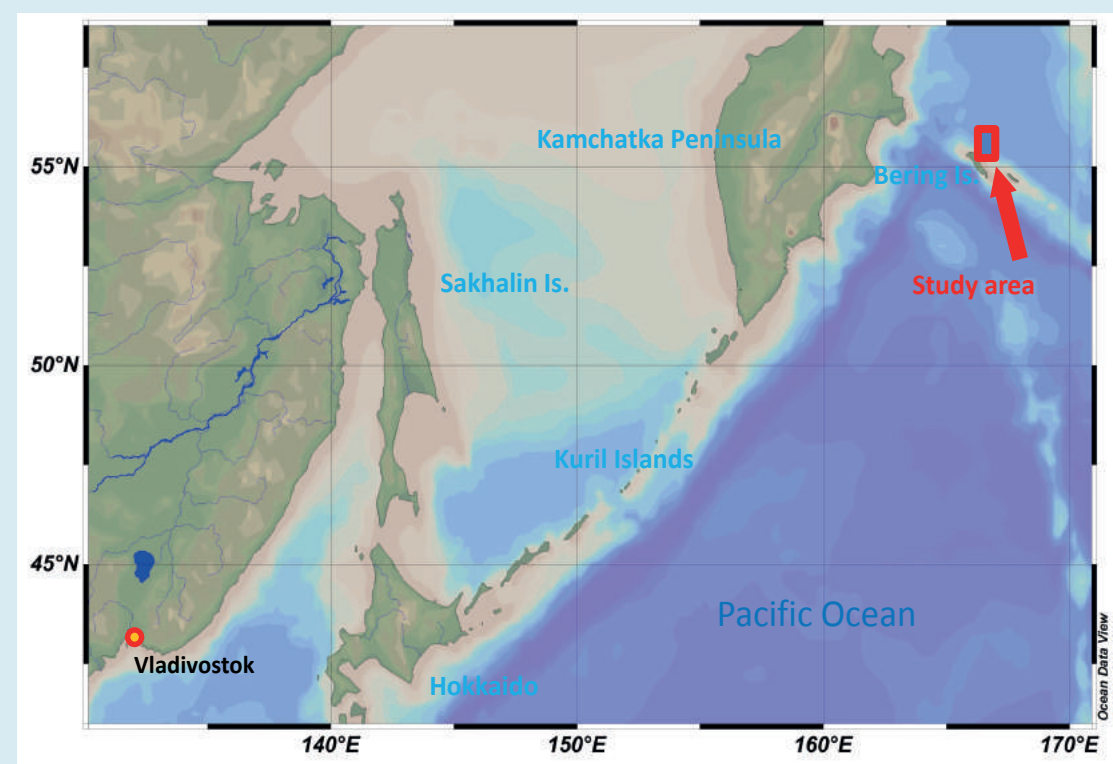


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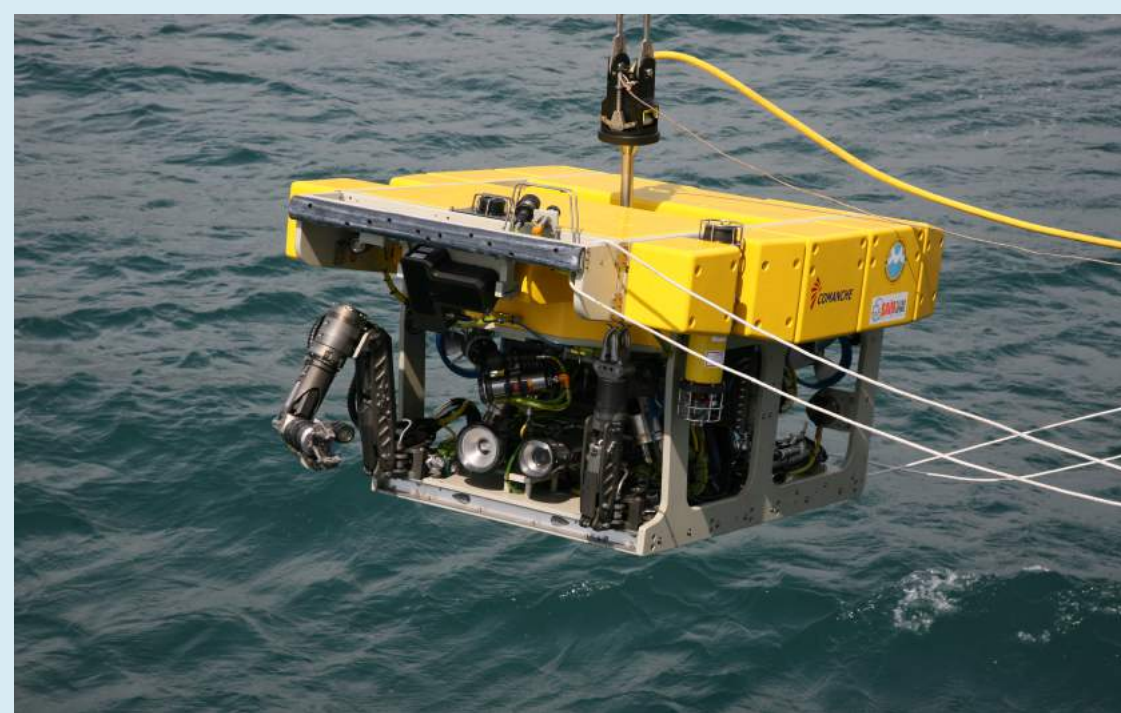


RV “Akademik M.A.Lavrentyev”



Study area

During the 75th cruise of RV “Akademik M.A.Lavrentyev” (June 2016) landscape-ecological environment and the distribution of macro and mega benthos on the northern slope of the Vulkanologov Massif (south-west Bering Sea) have been explored using ROV “Comanche 18”. Seven dives were performed in the depth range from 4278 up to 349m. From technical considerations routes of dives were directed upwards along the slope. Continuous visual observations (total duration 40hrs 16min) have been provided. For the estimation of size of objects and the area of the surveyed bottom the 10cm laser scale was used. The observations were accompanied by photographic and video recording. A series of video transects were performed at a speed of approximately 0.5 knots. In total, 1372 photo images and 22hrs 29min videos were analyzed. During each dive samples of bottom fauna were collected using mechanical arm of ROV. With the help of deep-sea taxonomic experts, collected, photographed and video recorded animals were identified to the lowest taxonomic level possible. Totally more than 150 macro and mega faunal species have been distinguished. Using video transects relative abundance of dominant (=landscape determining) taxa were calculated for different depth ranges. As a result general patterns of vertical distribution of bottom communities were established. At maximal explored depth the abyssal community is dominated by several holothurian species, among them *Kolga kamchatica* are most abundant. Starting from the depth 3600m sedimented slope is occupied by the community dominated by *Scotoplanes kurilensis*. At the depths 3000-2800m dense settlements of ophiuroids (several dozens of specimens per m⁻²) were observed. Starting from the depth of 2650m synallactid holothurians *Pelopotides solea* and red benthopelagic Trachymedusae (pres. fam. Rhopalonematidae) dominate the community. In the depth range 2290 – 1830m mass development of the acorn worms Enteropneusta (fam. Torquaratoridae) were recorded (up to 10 specimens per m⁻²). Above 1700m aggregations of hexactinellid sponges *Farrea occa* compose the basis of landscape. Live and dead sponges are inhabited by diverse fauna. Starting from the depth 700m the community is dominated by soft corals (Alcyonaria and Corallimorpharia). The summit area (390-349m) is occupied by dense settlements of zoantharians *Epizoanthus* sp. Based on vertical distribution of megafaunal taxa the depths of most prominent faunistic boundaries have been revealed.

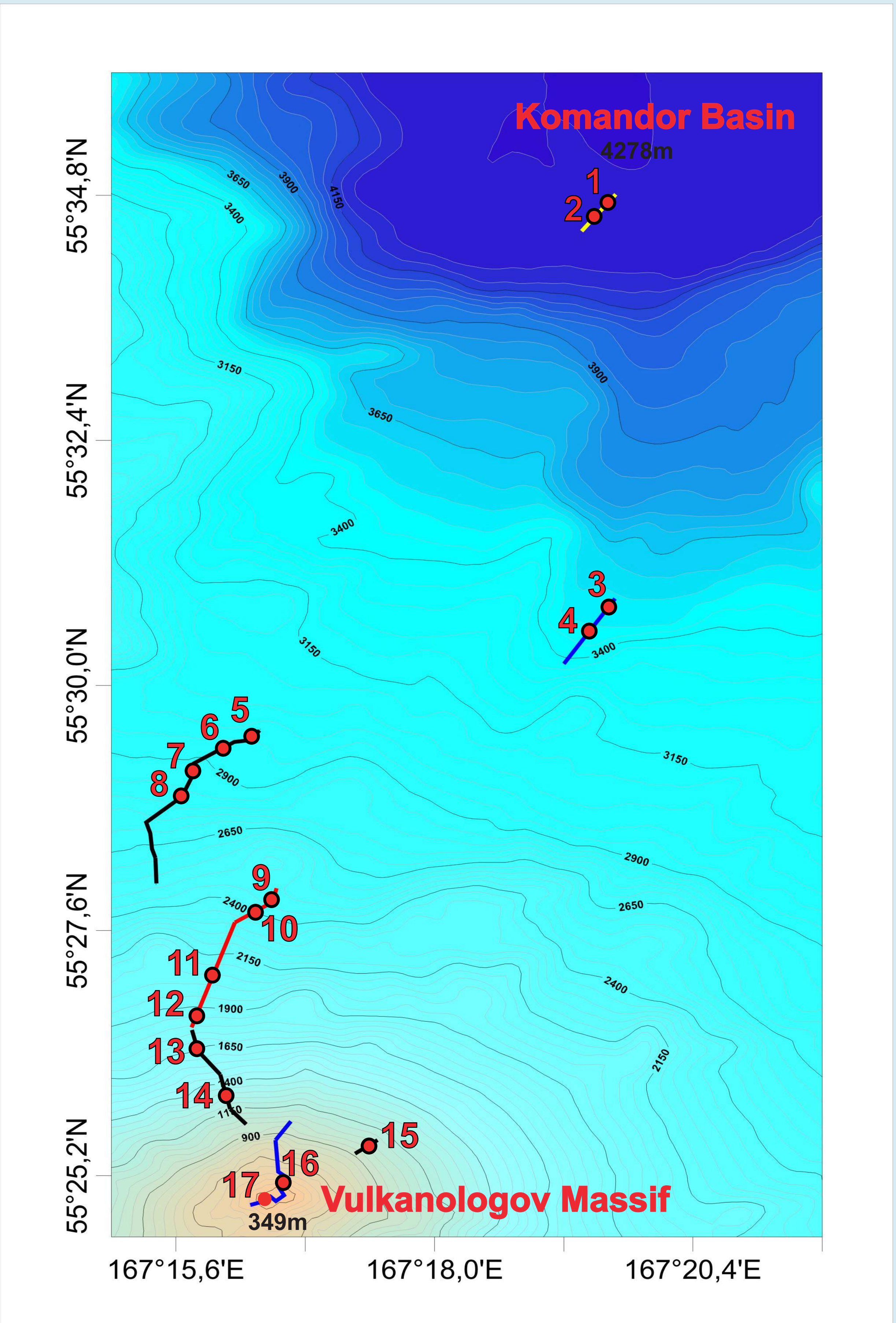


ROV “Comanche 18”



ROV operating room

ROV “Comanche” routes



Kolga kamchatica – most abundant holothurians at Komandor Basin floor. Depths 4277- 4278m.



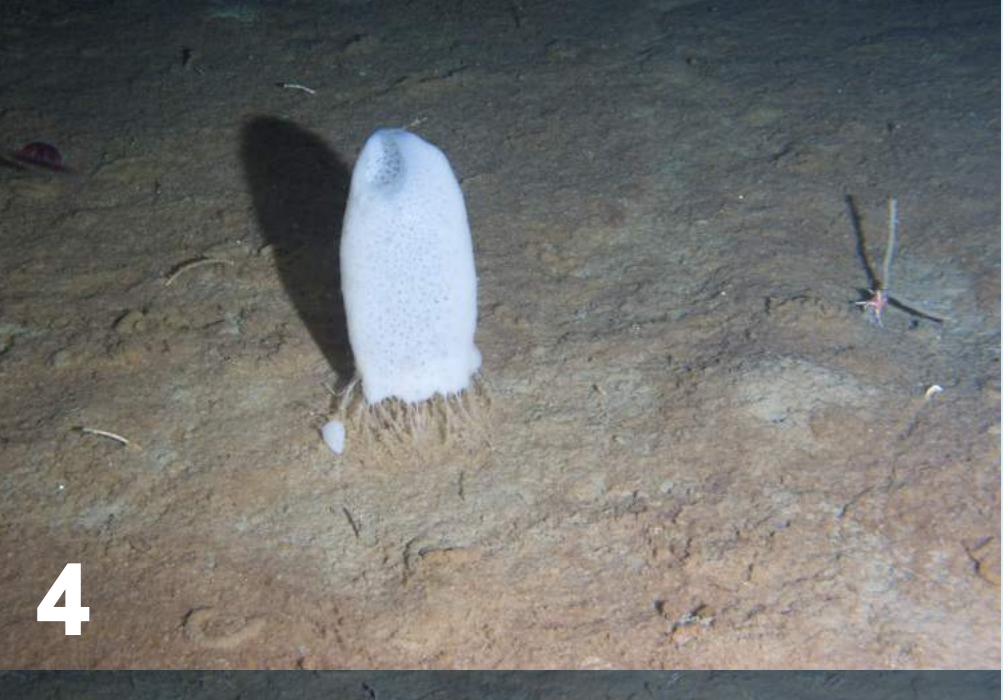
Large holothurian *Psychropotes longicauda* s.l. common at Komandor Basin floor. Depth 4278m.



Fungiform sponges *Caulophacus* sp. (fam. Rossellidae) inhabiting dead sponge *Perifragella* sp. Depth 3592m.



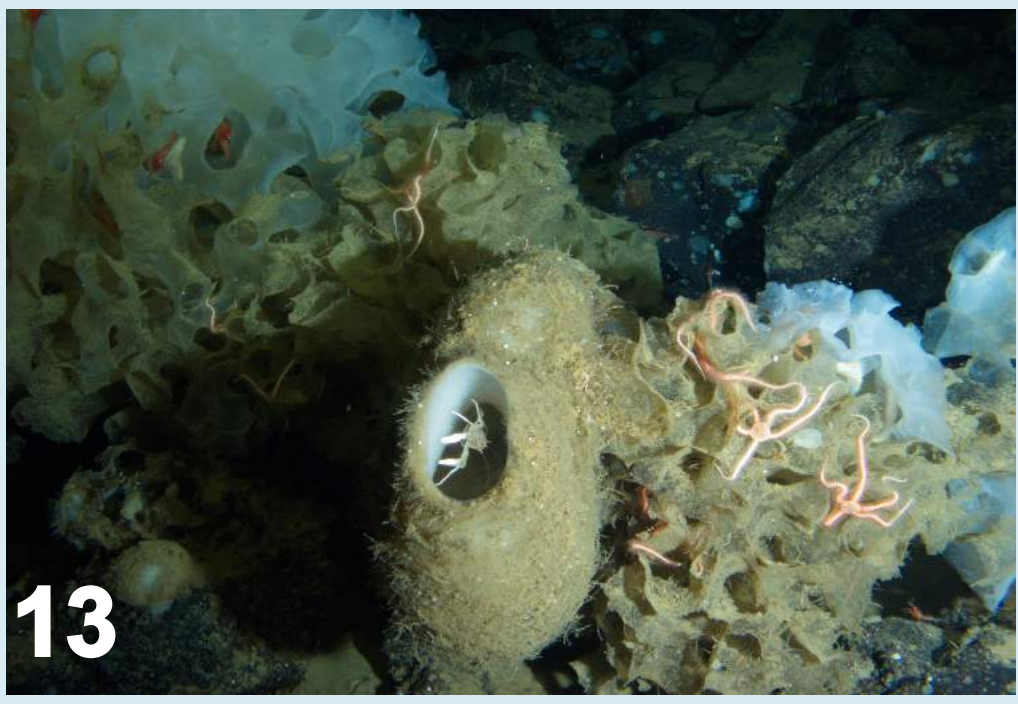
Glass sponges *Holascus* sp. (fam. Euplectellidae) – characteristic element of the landscape of lower slope. Depths 3610-3451m.



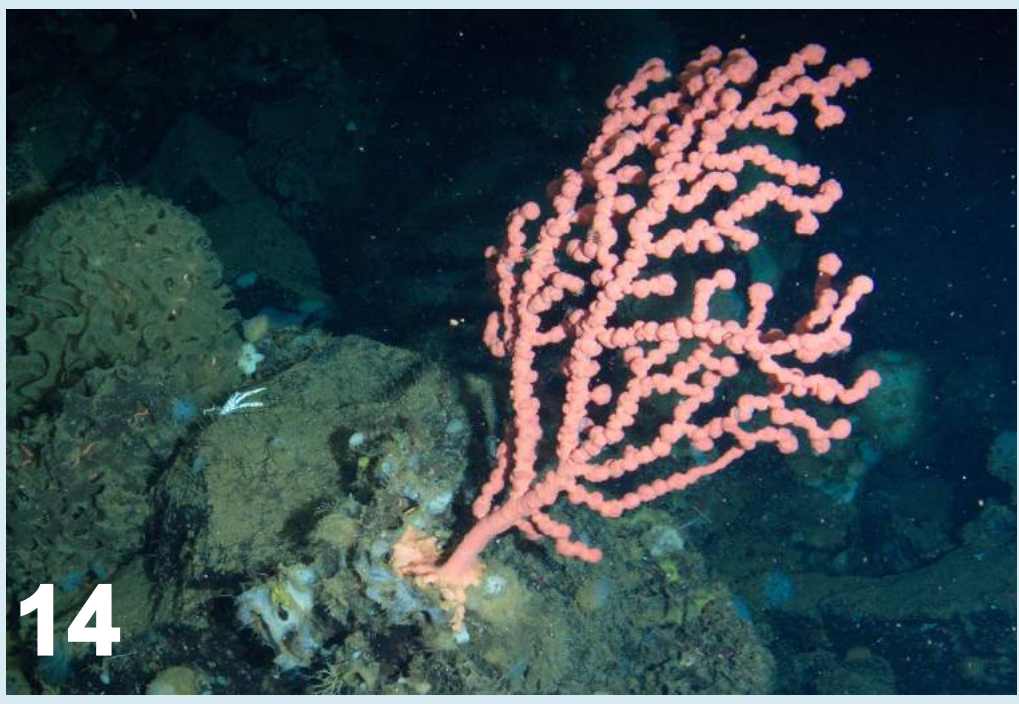
Sea pigs *Scotoplanes kurilensis* (fam. Elpidiidae) and numerous brittle stars – dominant animals at the depths 3400-2800m.



Aggregation of *Scotoplanes kurilensis*. Depth 2918m.



Many animals are associated with dead and live glass sponges: shrimps, brittle stars, galatheid crabs, etc. Depth 1671m.



Deep-water coral *Paragorgia* sp. (Octocorallia). Depth 1284m.



Dead and live sponges *Farrea occa* form a kind of reefs inhabited by diverse fauna. Depths 1700 – 700m.



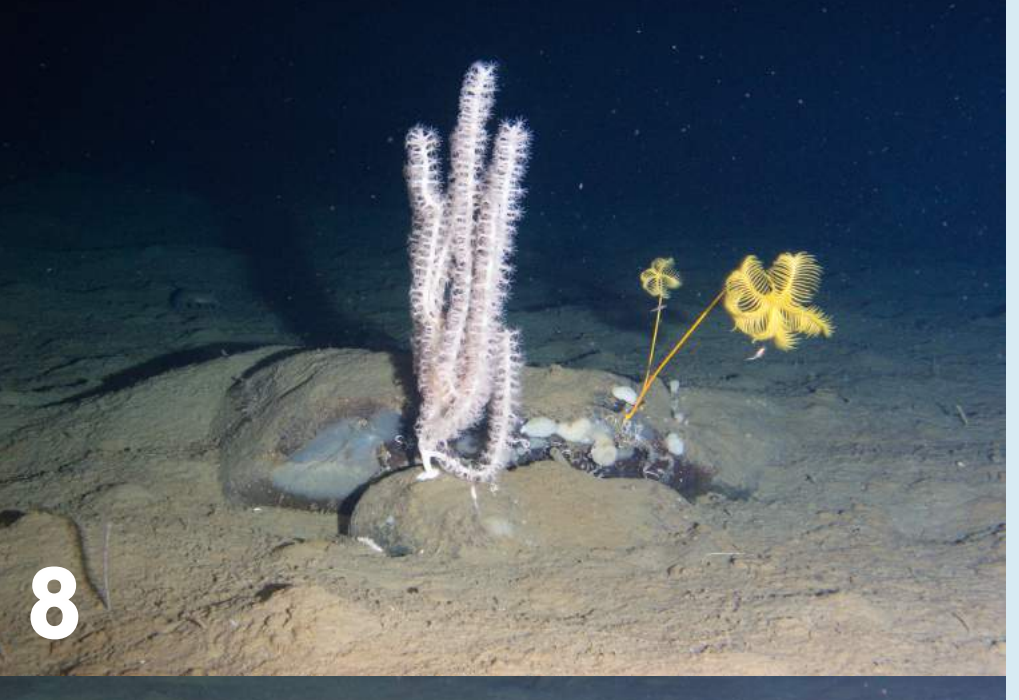
Dominating animals of the upper slope: pink *Anthomastus* sp. (Alcyonaria) and white *Corallimorphus pilatus* (Corallimorpharia). At the bottom: rockfish *Sebastes* sp. Depth 450m.



The summit area is covered by contiguous populations of small zoantharians *Epizoanthus* sp. Depths 390-348m.



Sea anemone *Liponema brevicorne* (fam. Liponematidae). Depth 2889m.



Bamboo coral (fam. Isididae) and stalked crinoids *Camaecrinus klikushini* (fam. Hyocrinidae). Depth 2846m.



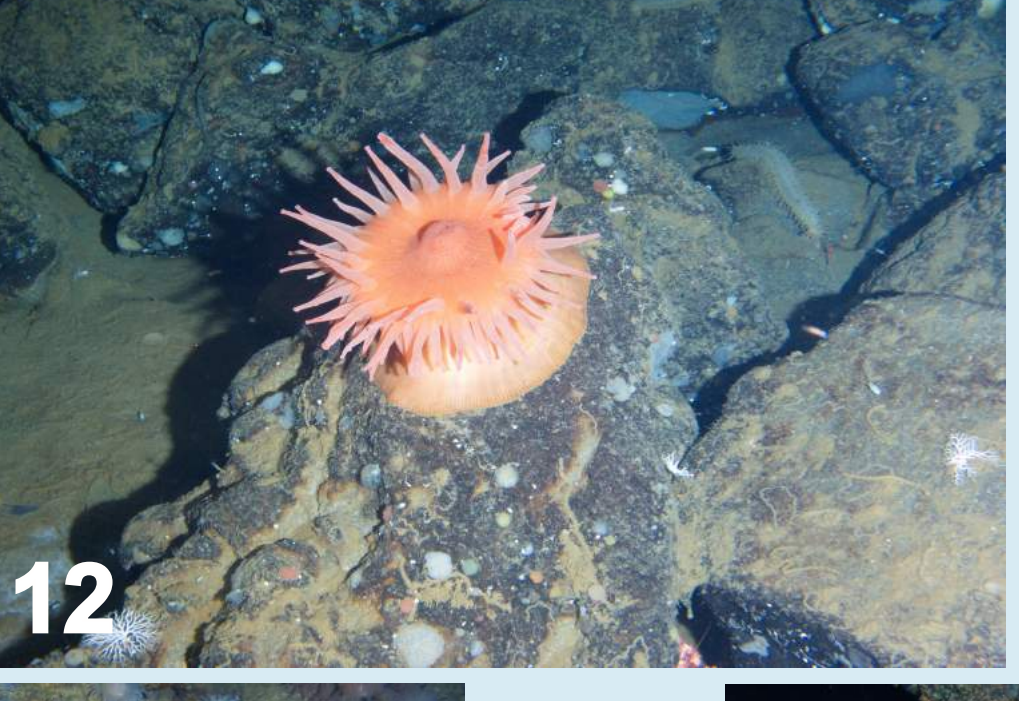
Holothurians *Pelopotides solea* (fam. Synallactidae) dominate the community at the depths 2650 – 2140m.



Red benthopelagic Trachymedusae (pres. fam. Rhopalonematidae) abundant at the depths 2470 – 2050m.



Unusual dense aggregations of acorn worms (Enteropneusta, fam. Torquaratoridae) were recorded at depths 2290 – 1830m.



Sea anemone *Stomphia* sp. (fam. Actinostolidae). Depth 1831m.