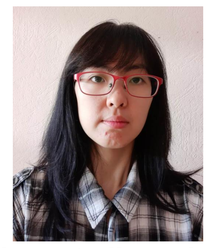
GP 15674

SIZE–AGE COMPOSITION AND SOME CHARACTERISTICS OF THE POPULATION BIOLOGY OF *RUDITAPES PHILIPPINARUM* (ADAMS ET REEVE, 1848) IN THE SALMON BAY (ANIVA GULF, SEA OF OKHOTSK)

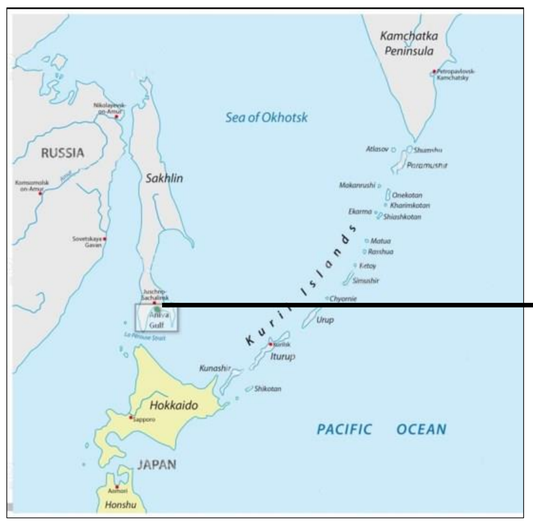
Anastasiya Kim

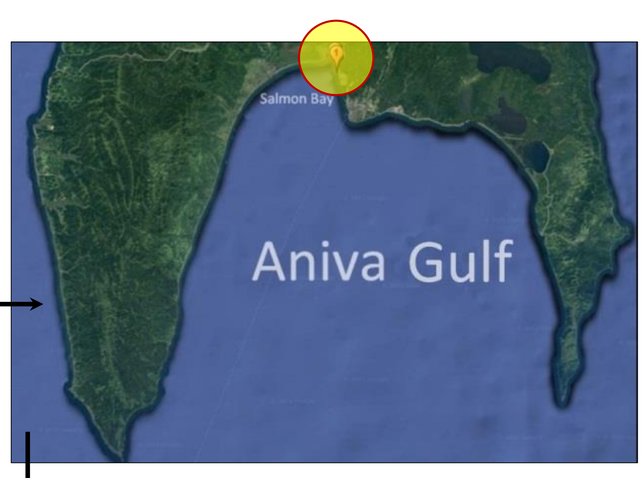
Russian Federal Research Institute of Fisheries and Oceanography (VNIRO), Sakhalin Branch (SakhNIRO), Yuzhno-Sakhalinsk, 693023, Russia



Ruditapes philippinarum

The scientific research of *R. philippinarum* was carried out in the eastern part of Salmon Bay (Aniva Gulf, Sea of Okhotsk) in May 2021 and 2022. The work program included surveys on a standardized network of sections, as well as the definition of baseline surveys (temperature and salinity measurements). In this work the results of the size-weight and age composition analysis of *R. philippinarum* are considered, and the spatial distribution of the clam (specific density and biomass) is studied, and the commercial stock of the species is calculated.



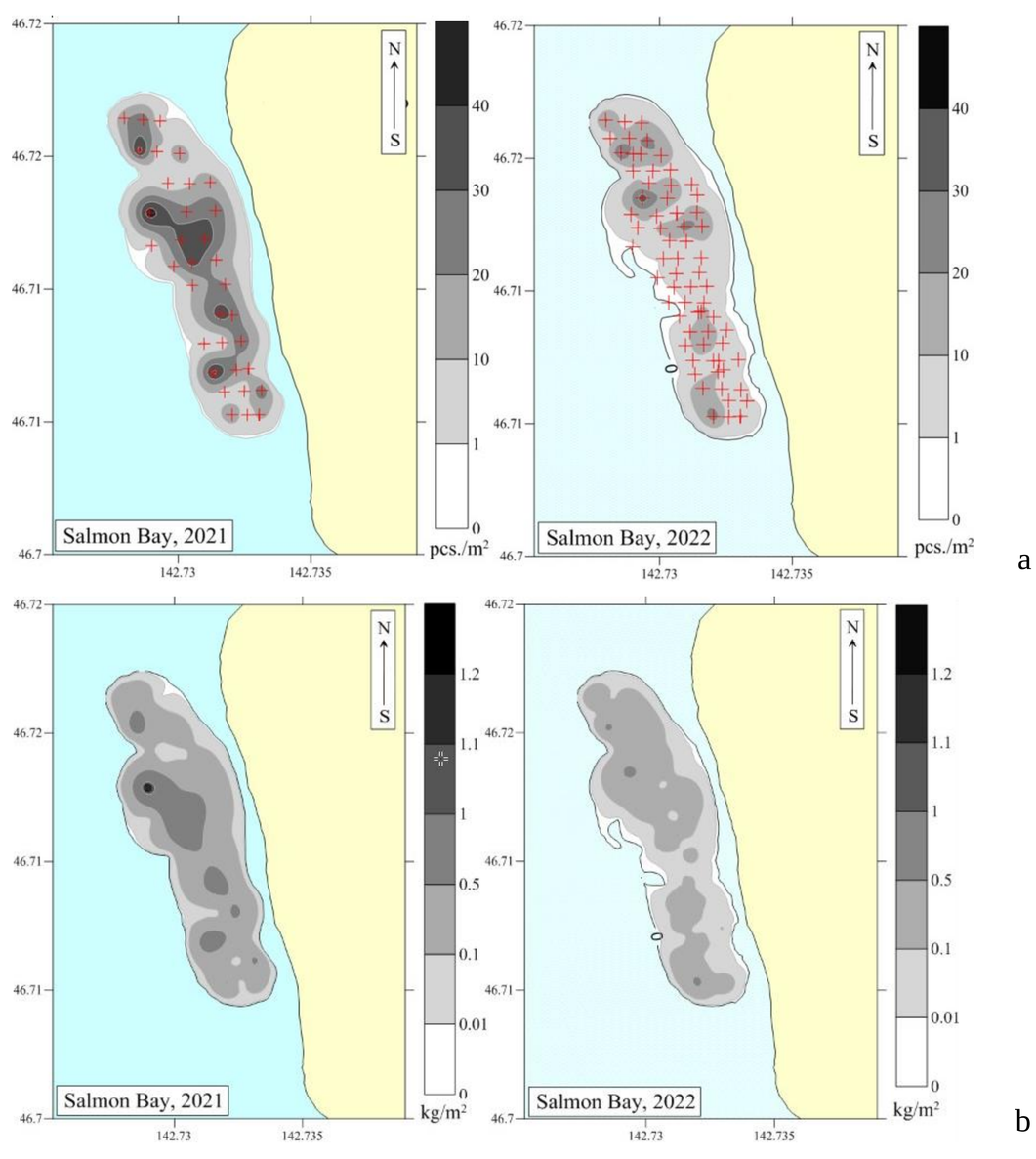


Schematic map of the study area

In general, the specific density and biomass of *R. philippinarum* in 2022 are at a low level. So, near the Solovyevka village in 2022, the average density of *R. philippinarum* was 9.3 pcs/m^2, biomass – 0.17 kg/m^2. Compared to 2021, the specific number of *R. philippinarum* in the settlement decreased by 2.3 times. The total distribution area was 260 000 m^2.

The proportion of commercial individuals (shell length over 30 mm) was 99.2%. The total stock of *R. philippinarum* decreased significantly compared to the previous year, and was determined at 43.7 tons, the commercial stock – at 43.35 tons.

The survival of *R. philippinarum* could be affected by positive sea surface temperature anomalies, especially in July 2021, when the average monthly temperature (according to satellite data) reached 20.9°C (at normal 14°C). And in shallow water, warming could be even higher.



a

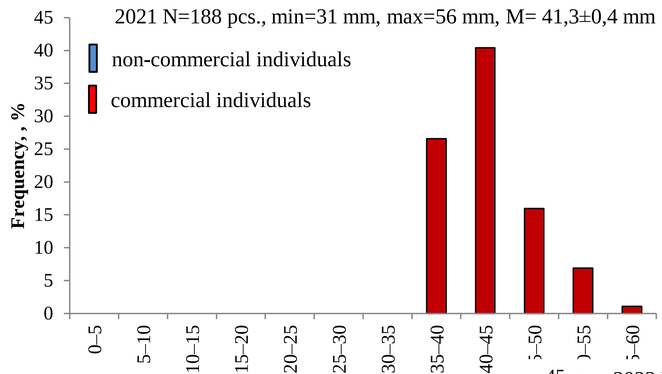
b

Distribution of *Ruditapes philippinarum* density (pcs./m^2) and biomass (kg/m^2) in the Salmon Bay (Aniva Gulf, Sea of Okhotsk) in 2021 and 2022

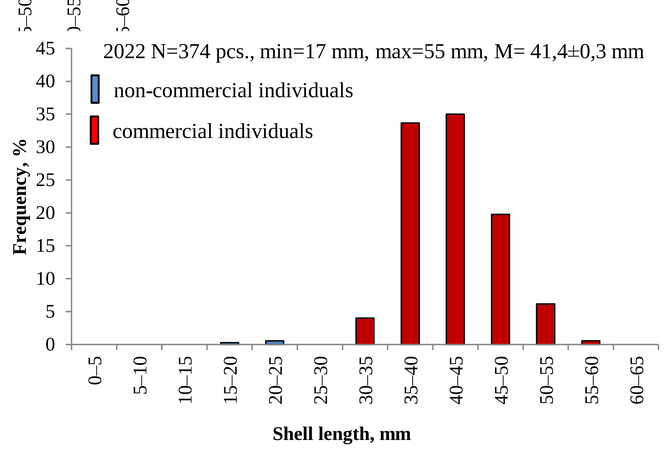
During the study period, the biological parameters of *R. philippinarum* remained practically at the same level. As an example we will pay attention to the size-weight and age structure of the clam in the study area.

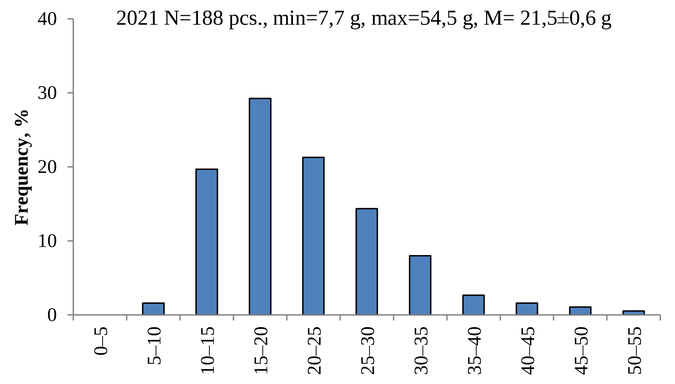
Near the Solovyevka village, in general, the size composition of the settlement for the period under consideration (2021–2022) was practically similar. In 2021 and 2022 the average clam shell length was about 41.3–41.4 mm. In both years the same range of commercial individuals with a shell length of 35–45 mm prevailed. At the same time the average weight of *R. philippinarum* was 21.5 g and 18.5 g, respectively. Mostly individuals had a body weight from 10 to 25 g.

In Salmon Bay in 2021 and 2022, 7 age classes were identified. In both years the largest frequency of occurrence fell on commercial clam at the age of 3+–4+ years. In addition to this a very small part was represented by small-sized individuals (1+–2+ years) in 2022. The average age of the clams was at the level of 4+ years.

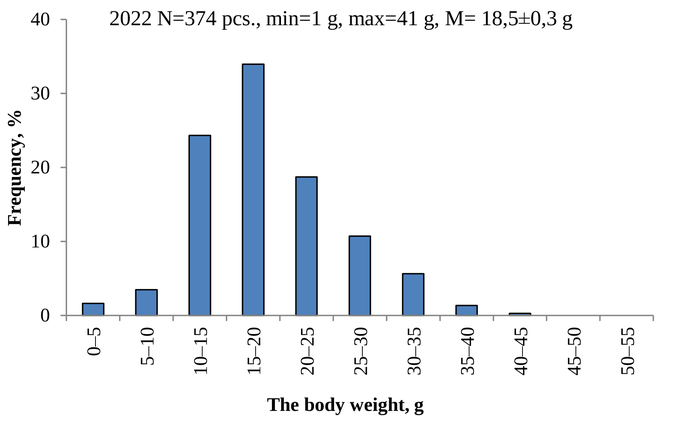


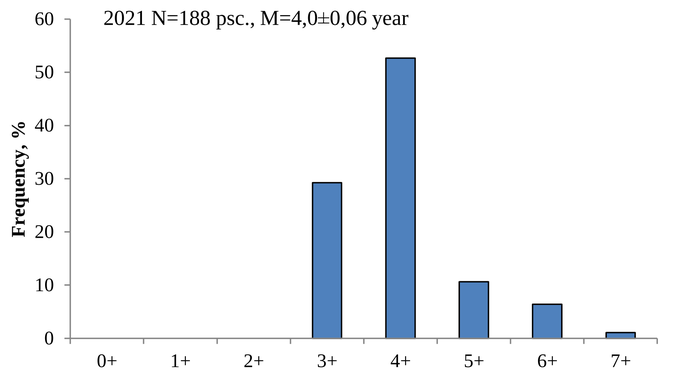
The distribution of the shell length of *Ruditapes philippinarum* in the eastern part of Salmon Bay (Aniva Bay) in 2021 and 2022





The distribution of the body weight of *Ruditapes philippinarum* in the eastern part of Salmon Bay (Aniva Bay) in 2021 and 2022

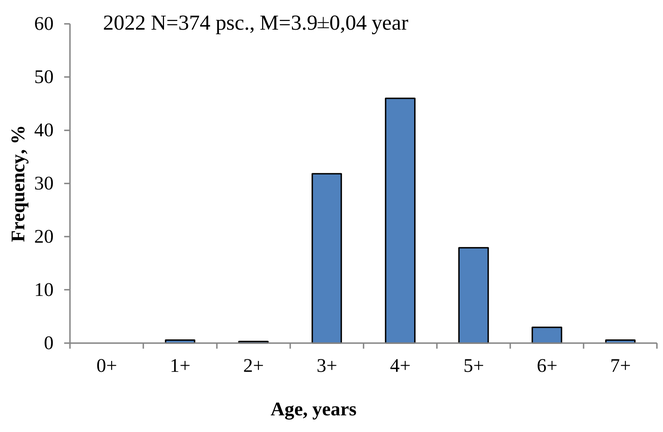




The age composition of the settlement of *Ruditapes philippinarum* in the eastern part of Salmon Bay (Aniva Bay) in 2021 and 2022

$$t = \frac{ln73{,}546 - ln(73{,}546 - L_{max})}{0{,}2117},$$

t – age of the *R. philippinarum*;
ln – natural logarithm;
L_{max} – length of each individual, mm.



The author thanks Gon R.T. for assistance in the collection and processing of material!