

Anna V. Radovets^{1,2}, Natalya K. Kolotukhina², Nadezhda K. Khristoforova¹

1 – Far Eastern Federal University, Vladivostok 690090, Russia, e-mail: radovets@list.ru

2 – A.V. Zhirmunsky National Scientific Center of Marine Biology, Far Eastern Branch of the Russian Academy of Sciences, Vladivostok 690041, Russia

The work was carried out in mid-July 2019 at 8 stations located at Lev Cape, in Srednyaya, Astafieva and Spaseniya Bays, at Hildebrandt Island and at Bolshoi Pelis Island: in Zapadnaya, Molchansky Bays and at the southern tip of the island. Plankton samples were taken by plankton net in the upper 10 m water layer.

A total of 24 plankton samples were collected and processed. The material was processed by standard method (Kulikova et al., 2013, 2014).

At the same time, measurements of temperature of surface water layers with a Checktemp thermometer were conducted. In addition, water samples were taken for hydrochemical analysis, which was carried out according to the accepted methodology (Summer training field practice for the quality of natural waters assessing, 2010).



Figure 2. Scheme of sampling stations.

In total, 36 taxa of bivalve larvae were identified in plankton, among them 25 were identified to the species, 4 to the genus, and 7 to the family. Larvae of early stages and larvae, the identification of which caused difficulties, were attributed to the group *Bivalvia* sp. The total number of larvae varied from 717 ind./m³ at station 6, located at Hildebrandt Island, up to 2580 ind./m³ at station 8, located in Astafieva Bay. Most of all were *Swiftopecten swiftii*, *Crassostrea gigas* and family Hiattellidae – up to 1175 - 1415, 448 - 460, and 143 ind./m³, respectively. At the same time, peaks in the density of *S. swiftii* larvae were noted at the southern tip of Bolshoi Pelis Island and in Molchansky Bay.

Maximum numbers of the oyster larvae were recorded in Astafieva and Srednyaya Bays. Peak density of the Hiattellidae larvae was noted in Srednyaya Bay. The taxonomical composition was dominated by representatives of family Mytillidae: *Mytilus trossulus*, *Mytilus galloprovincialis*, *Mytilus coruscus*, *Crenomytilus grayanus*, *Modiolus kurilensis*, *Modiolus modiolus*, *Adula falcatoides*, *Musculista senhousia*, *Septifer keenae* and not identified to the species larvae of the family.

The Pearson correlation coefficient showed the presence of a weak positive relationship between the number of larvae in plankton and the temperature of surface water layers ($R = 0.30$). The average BOD₅ value for the area was 0.93 mg O₂/L, which indicates the relative purity of the studied region.

The significant prevalence of *S. swiftii* larvae in plankton is obviously associated with the presence of adult settlements of the species in eastern part of the reserve (Lebedev, 2015). Most of the species that we have noted are also typical inhabitants of the protected water areas (Skarlato, 1967; Lebedev et al., 2004, and others). However, some of the studied larvae belong to the species that are not included in the list of adult mollusks inhabiting Peter the Great Bay due to their rare occurrence, habitat in the fouling biotope, or drift by currents from adjacent waters. These are *T. navalis*, *M. veneriformis*, and *M. modiolus*.

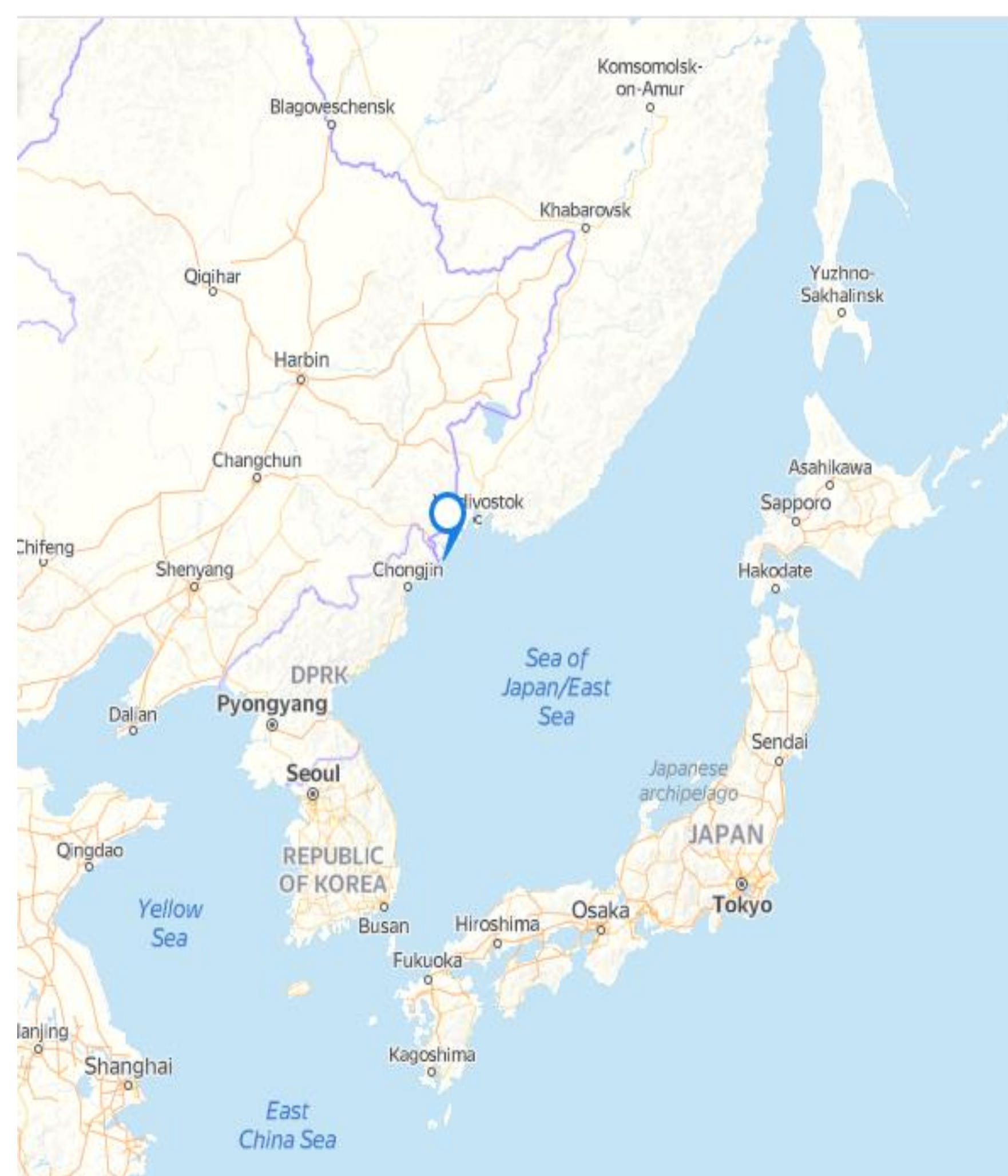


Figure 1. A map of the area of work. Blue mark – Far Eastern Marine Reserve.

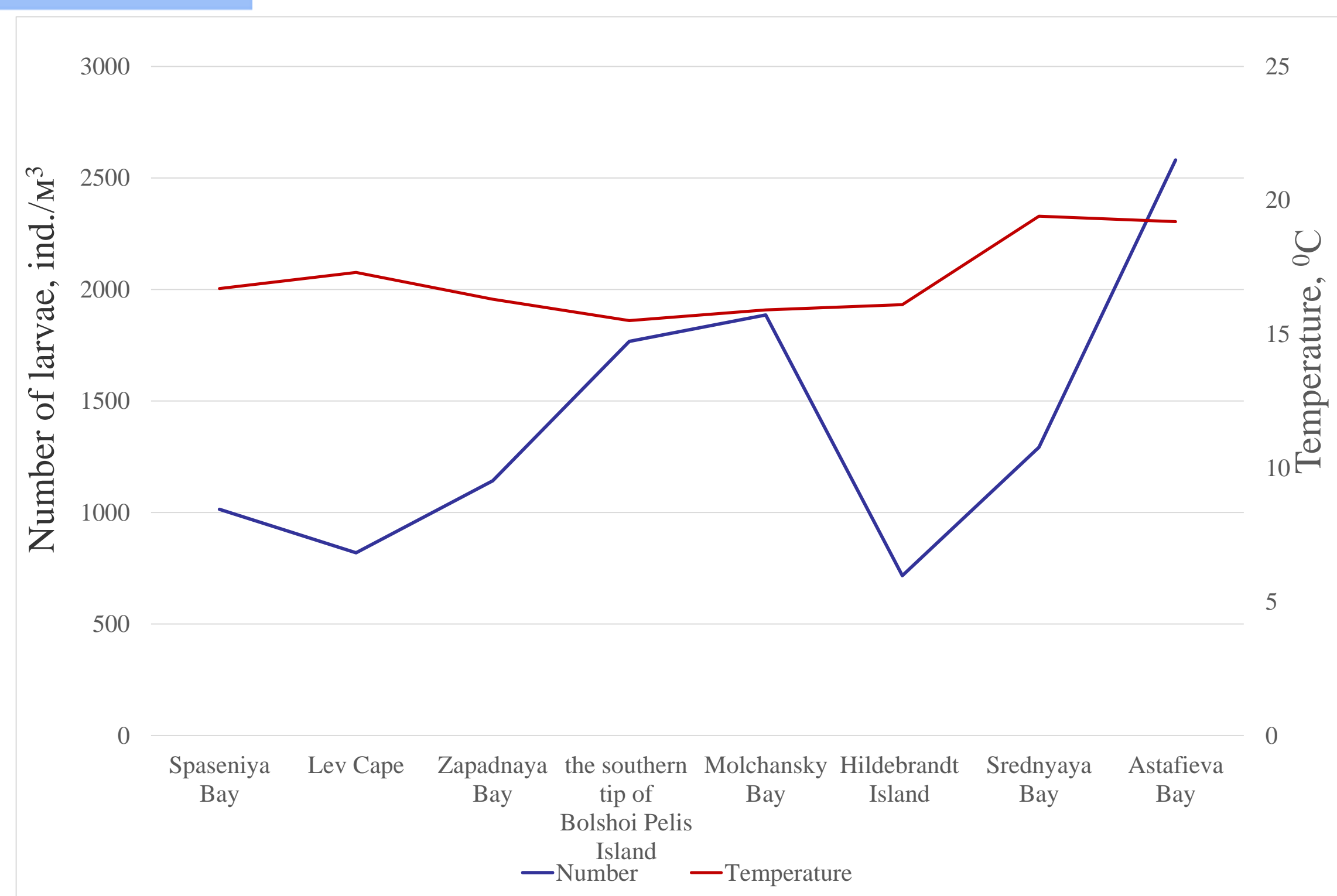


Figure 3. Dependence of the total number of bivalve larvae (ind./m³) on the temperature of surface water layers ($R=0.30$).