

Winter mortality of *Ostrea edulis* and *Crassostrea gigas*

Some observations from the southern coast of Norway

Torjan Bodvin¹, Frithjof Moy¹, Pia Norling² and Anders Jelmert¹

¹Institute of Marine Research (IMR) ²Norwegian Institute for Water Research (NIVA)

Spatial distribution



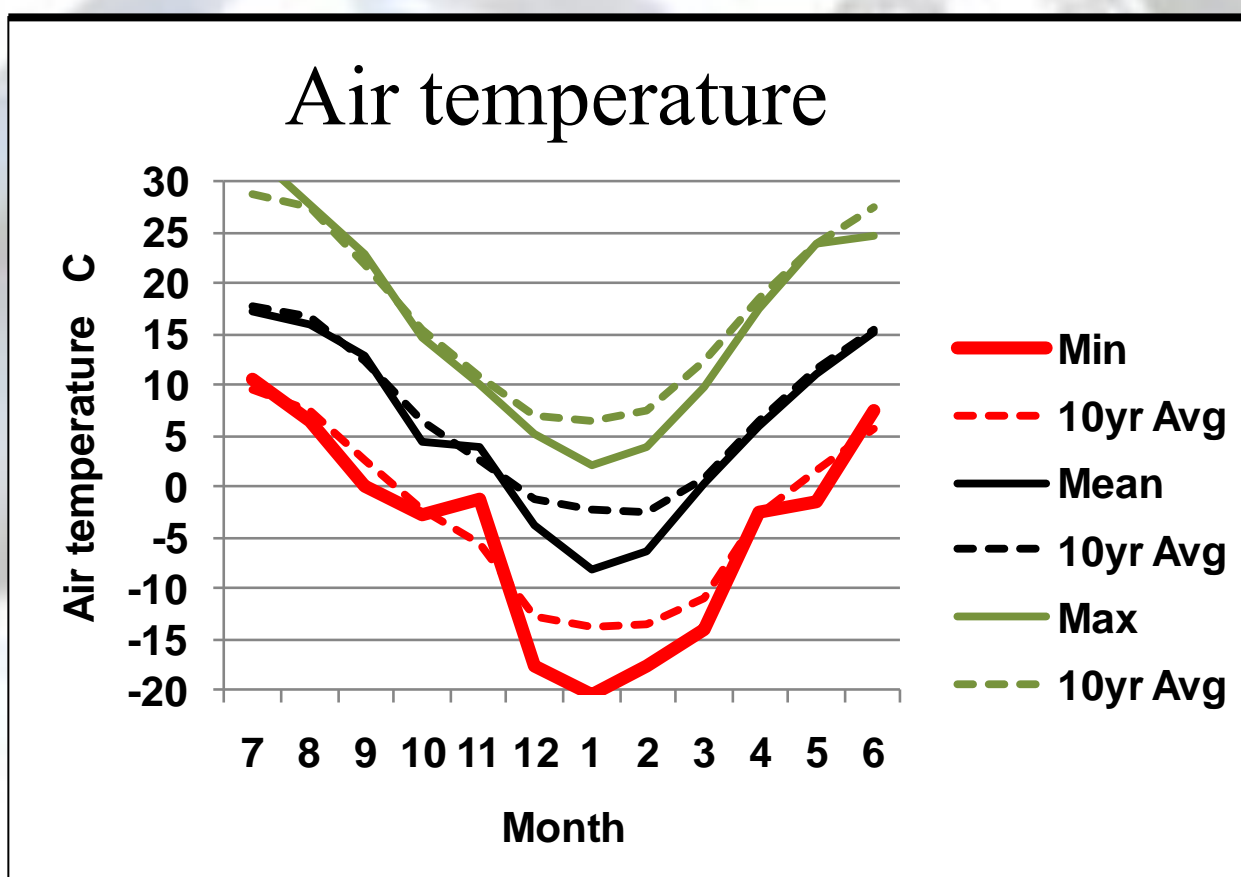
The introduced oyster *Crassostrea gigas* (Pacific oyster) has increased its distribution along the southern coast of Norway, since the first two records reported in 2002 and 2005. Mapping in 2008-2009 showed that *C. gigas* was frequent along our coastline from Sweden to the southern-most point of Norway (Skagerrak Sea).

The mapping showed overlapping distribution of the native *Ostrea edulis* and *C. gigas* on several locations, indicating possible competition for space.

In Sweden *C. gigas* was also commonly found along the Swedish West Coast in 2007-2008 (Swedish data).



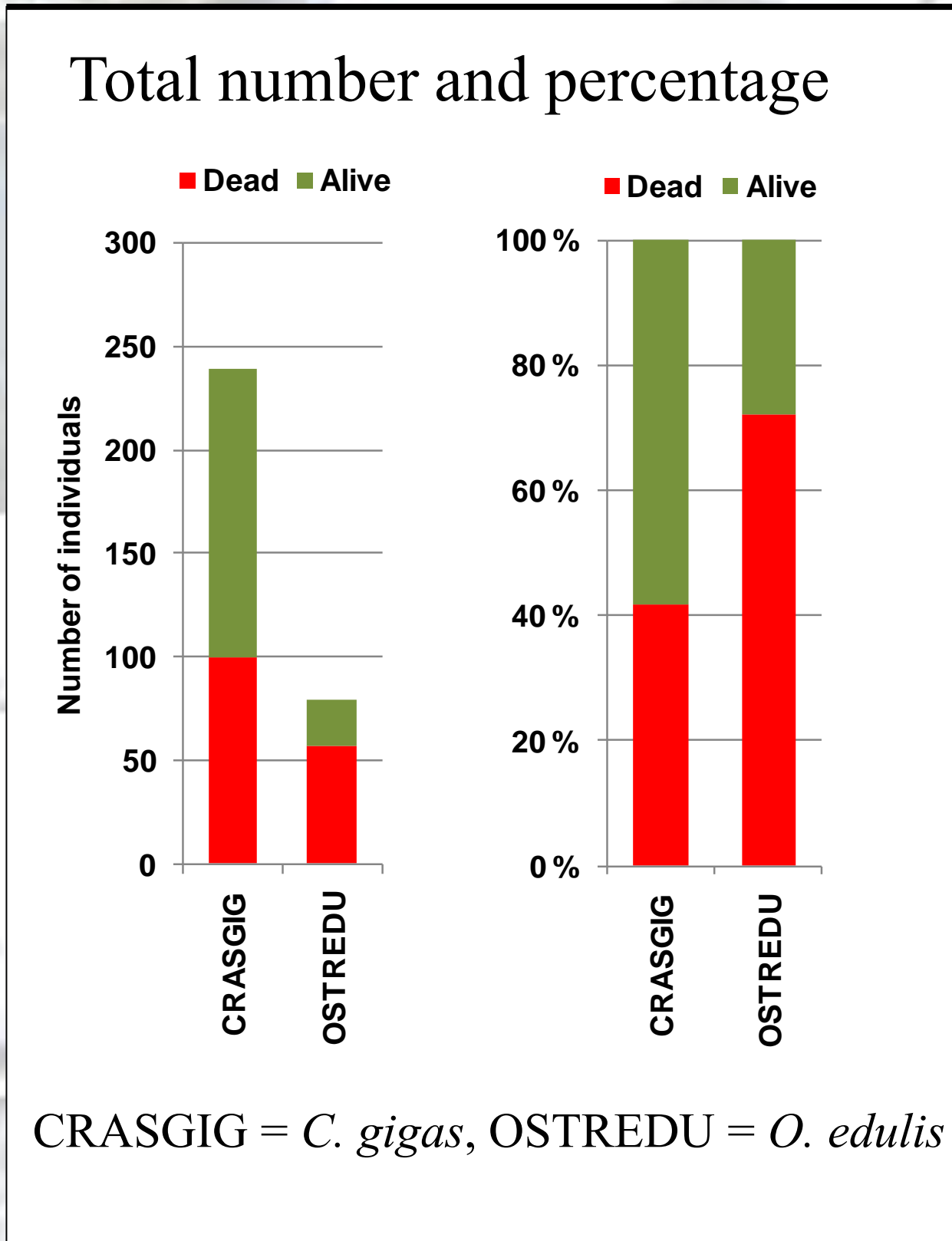
The Cold Winter 2009/2010



Temperature and ice-conditions were quite extreme in the winter 2009/2010 compared to the last 10 years. The coastal areas were covered with 30 cm of ice over a period of 3 months. Air-temperature was 5°C below average winter temperature, and with a minimum temperature of -20°C.



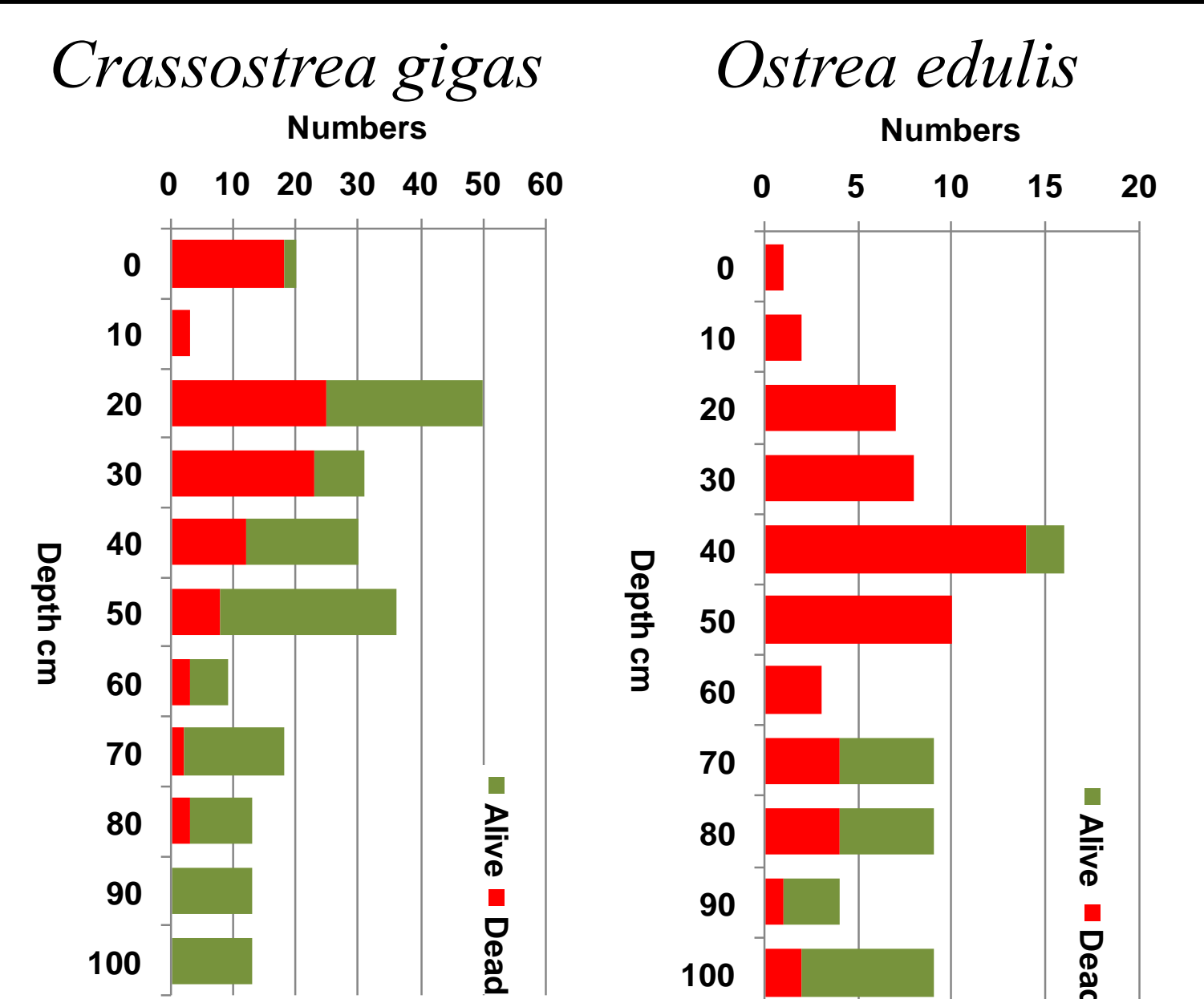
Mortality



In spring 2010 registrations of mortality for *C. gigas* and *O. edulis* according to species, water depth and mussel size were done at 5 locations along the southern coast of Norway. A total of 236 *C. gigas* and 78 *O. edulis* were collected.

The highest densities of *C. gigas* were found at the depth interval 0-50 cm (70 % of the total number), but 50 % of these were dead. Below 50 cm depth the observed mortality decreased, and almost 90 % of the oysters were alive in the lower 50-100 cm depth interval.

The survey showed that all but 2 individuals of the native *Ostrea edulis* found at 0-50 cm depth were dead (95 % of the total number). Densities of *O. edulis* increased clearly with depth in the upper 50 cm and were fairly stable below 50 cm. The mortality decreased significant with depth, and at 1m depth the observed mortality had decreased to 20 %.



Dead and alive oysters distributed over depth intervals of 10 cm. Normal tidal variation is between 5 cm above 0 and to 25 cm depth.

No correlation was found between size and mortality at any depth. The results indicate that *C. gigas* has higher tolerance for low temperatures/ice than *O. edulis*.

