

Fig. 1. Photochemical yield determined from pulse amplitude modulated fluorescence (PAM). The variable fluorescence parameter F_v/F_m was determined after a 5 min dark adaptation for all samples. Filled circles represent controls; unfilled circles were UV treated.

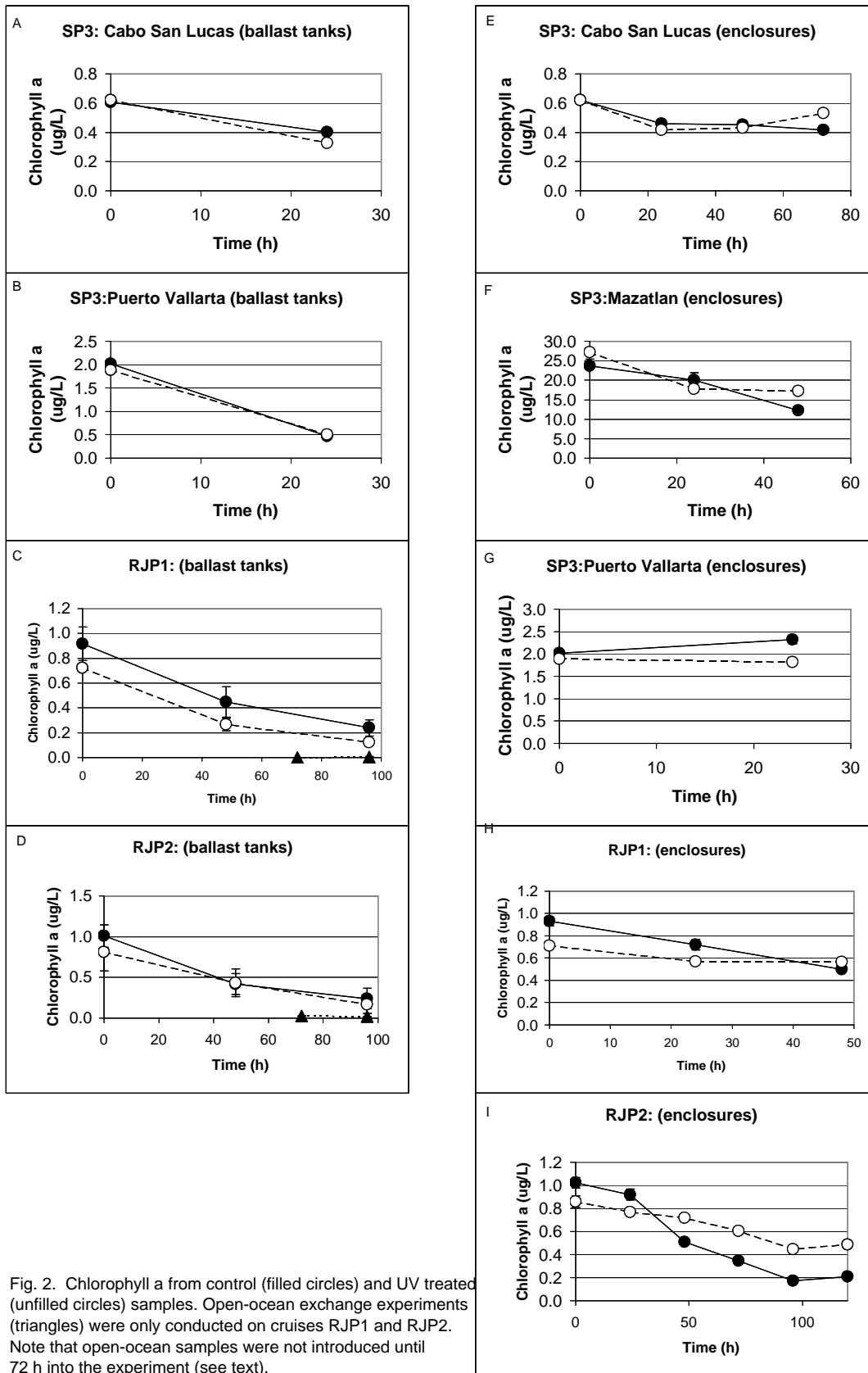


Fig. 2. Chlorophyll a from control (filled circles) and UV treated (unfilled circles) samples. Open-ocean exchange experiments (triangles) were only conducted on cruises RJP1 and RJP2. Note that open-ocean samples were not introduced until 72 h into the experiment (see text).

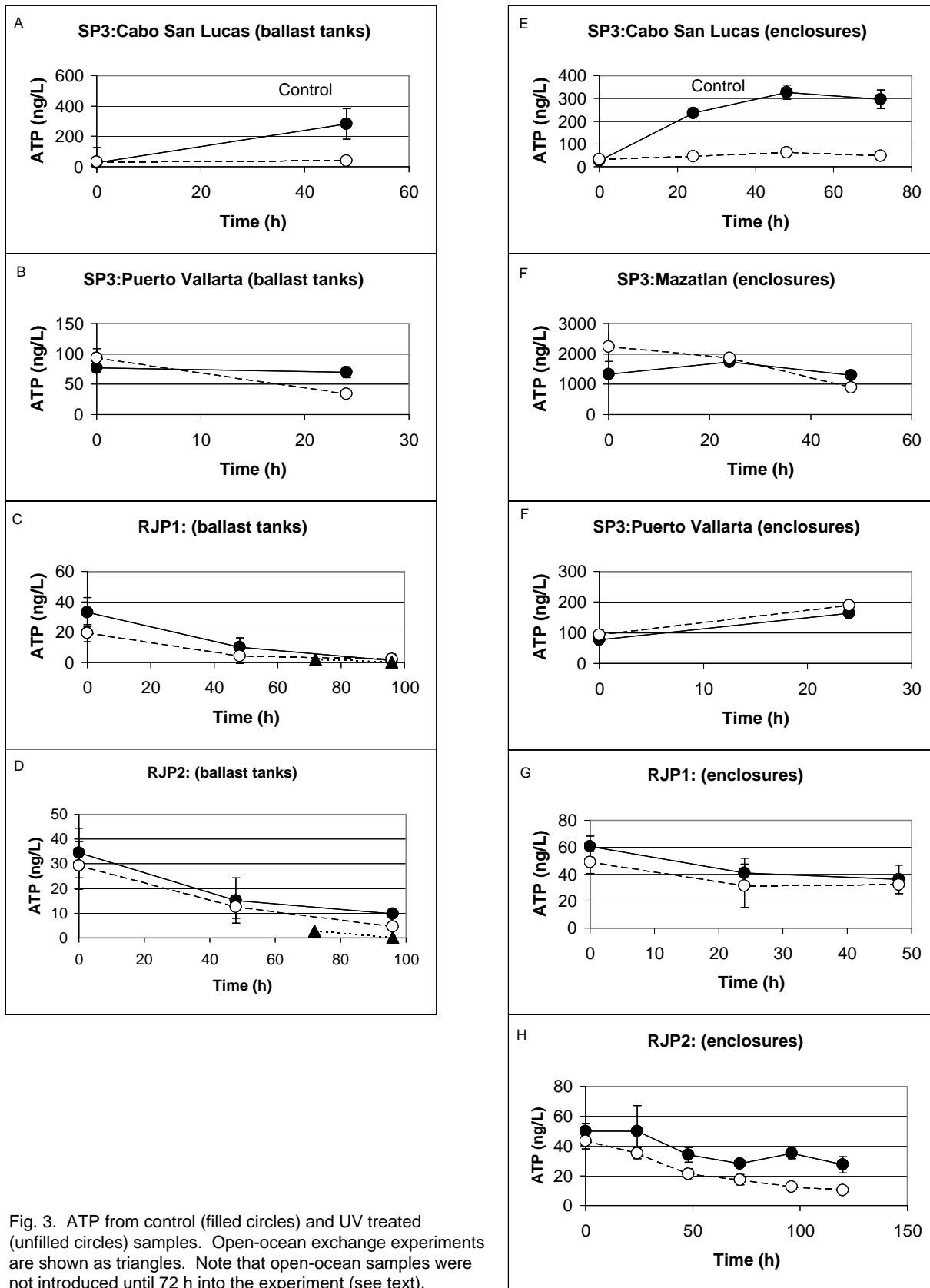


Fig. 3. ATP from control (filled circles) and UV treated (unfilled circles) samples. Open-ocean exchange experiments are shown as triangles. Note that open-ocean samples were not introduced until 72 h into the experiment (see text).

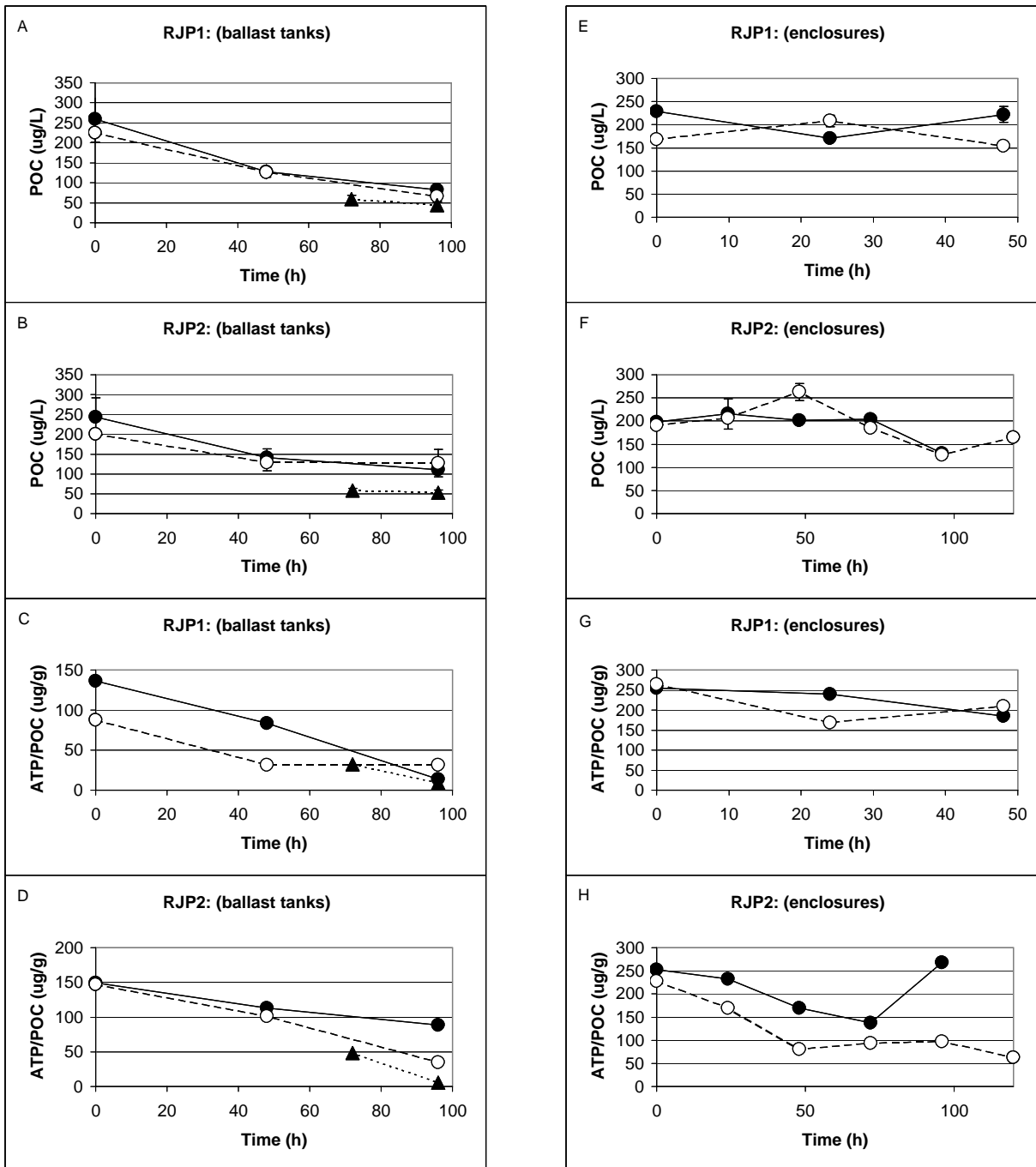


Fig. 4. Particulate organic carbon (POC) from control (filled circles) and UV treated (unfilled circles) samples. ATP/POC ratios expressed on a weight-basis as ug/g. Open-ocean exchange experiments are shown as triangles. Note that open-ocean samples were not introduced until 72 h into the experiment.

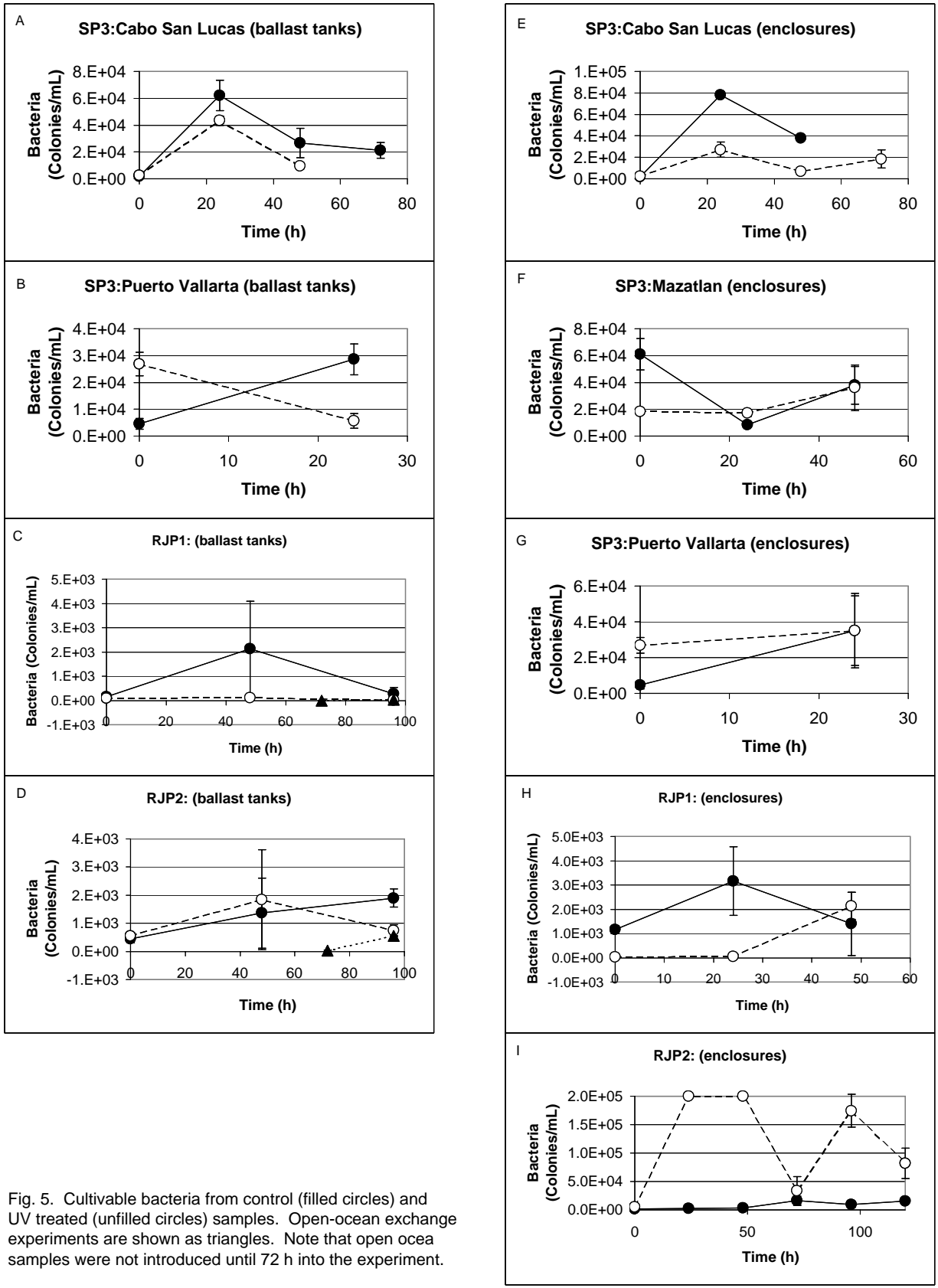


Fig. 5. Cultivable bacteria from control (filled circles) and UV treated (unfilled circles) samples. Open-ocean exchange experiments are shown as triangles. Note that open ocean samples were not introduced until 72 h into the experiment.

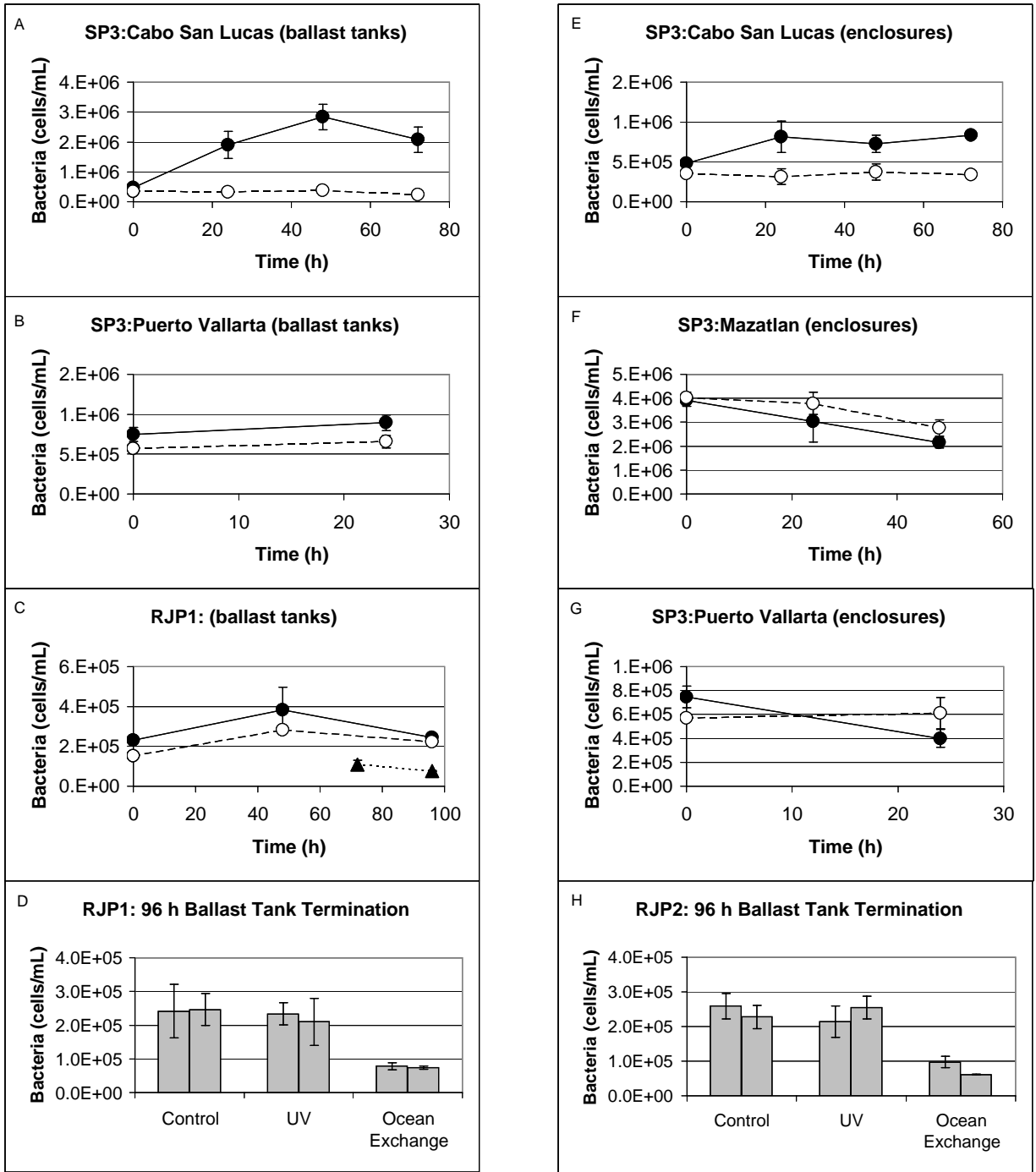


Fig. 6. Concentrations of bacteria determined by direct count (SYBER Gold stained) from control (filled circles) and UV treated (unfilled circles) samples. Open-ocean exchange experiments are shown as triangles. Note that open ocean exchange samples were not introduced until 72 h into the experiment (see text). Time series bacterial determinations were not made for RJP2.

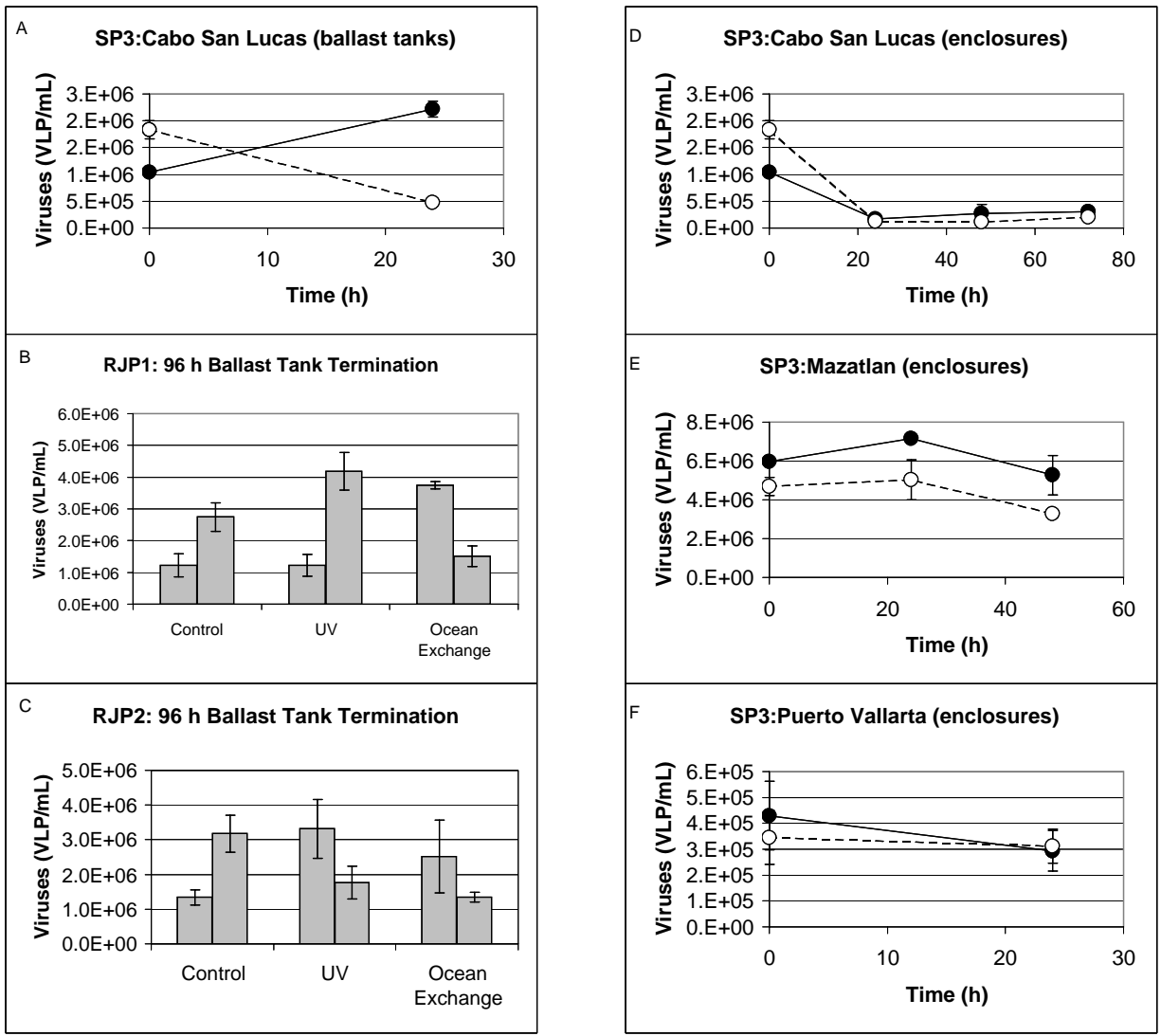


Fig. 7. Concentrations of virus like particles (VLP) determined by direct count (SYBER Gold stained) from control (filled circles) and UV treated (unfilled circles) samples. Open-ocean exchange experiments are shown as triangles.



Fig. 8a. Identical 135 mL filtrations onto GF/F glass fiber filters. Left-most filter represents incoming ballasted water from Cabo San Lucas harbor sampled before contact with ballast tanks. Filters on the right were collected directly from the receiving ballast tanks 24 h later.

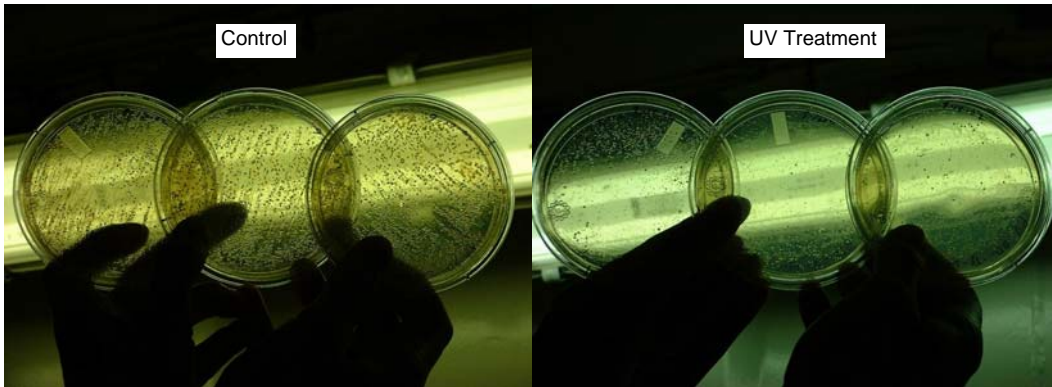


Fig. 8b. Bacteria grow-out plates from ballast tank experiments collected in Puerto Vallarta on cruise SP3; samples correspond to those in Fig. 5b, 24 h.

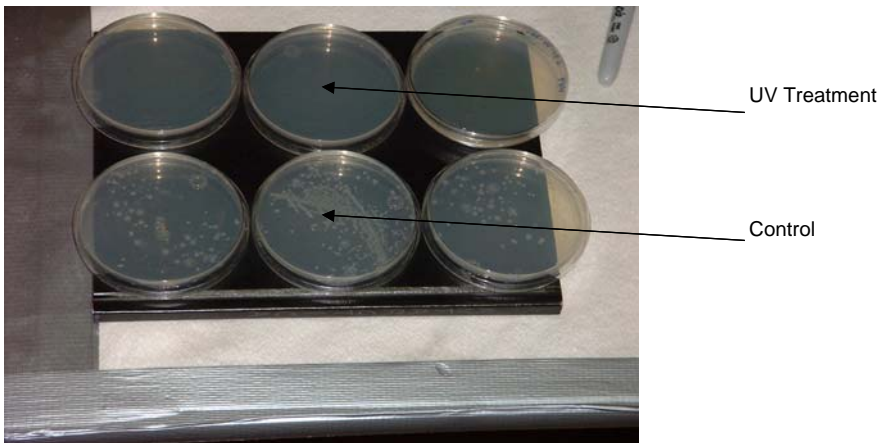


Fig. 8c. Bacteria grow-out plates from enclosure experiments conducted on cruise RJP1; samples correspond to those in Fig. 5h, 24 h.

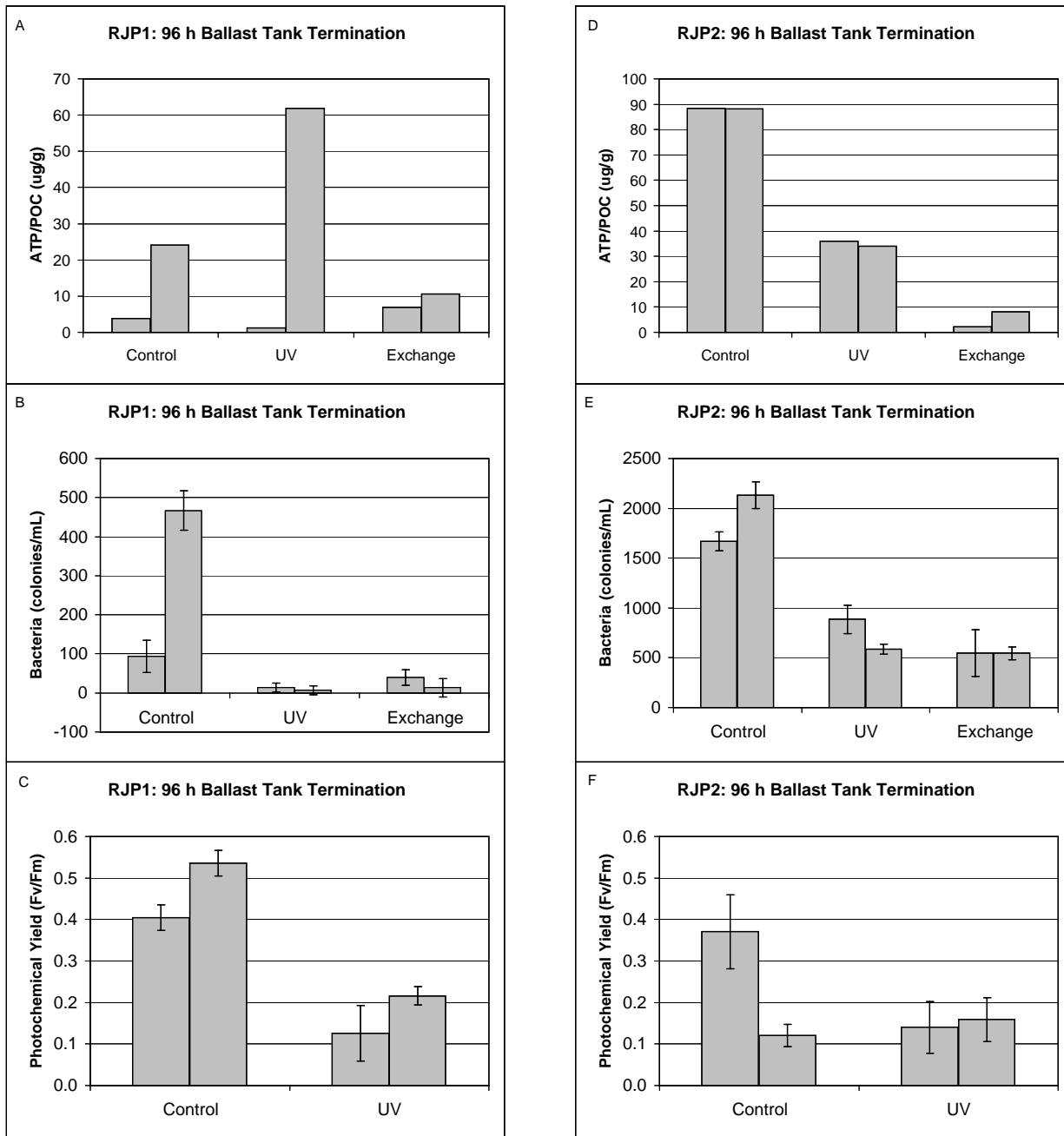


Fig. 9. Comparisons of Honolulu Harbor water (control and UV treated) to open ocean exchange water. Honolulu Harbor water was held in ballast tanks for 96 h; open ocean exchange water was held in ballast tanks for 24 h (see text). Each bar represents data from a single ballast tank; three pairs of ballast tanks were used for these experiments. Photochemical yield measurements (c and f) could not be made on open ocean exchange water due to low chlorophyll concentrations (ca. 0.03 ug/L).

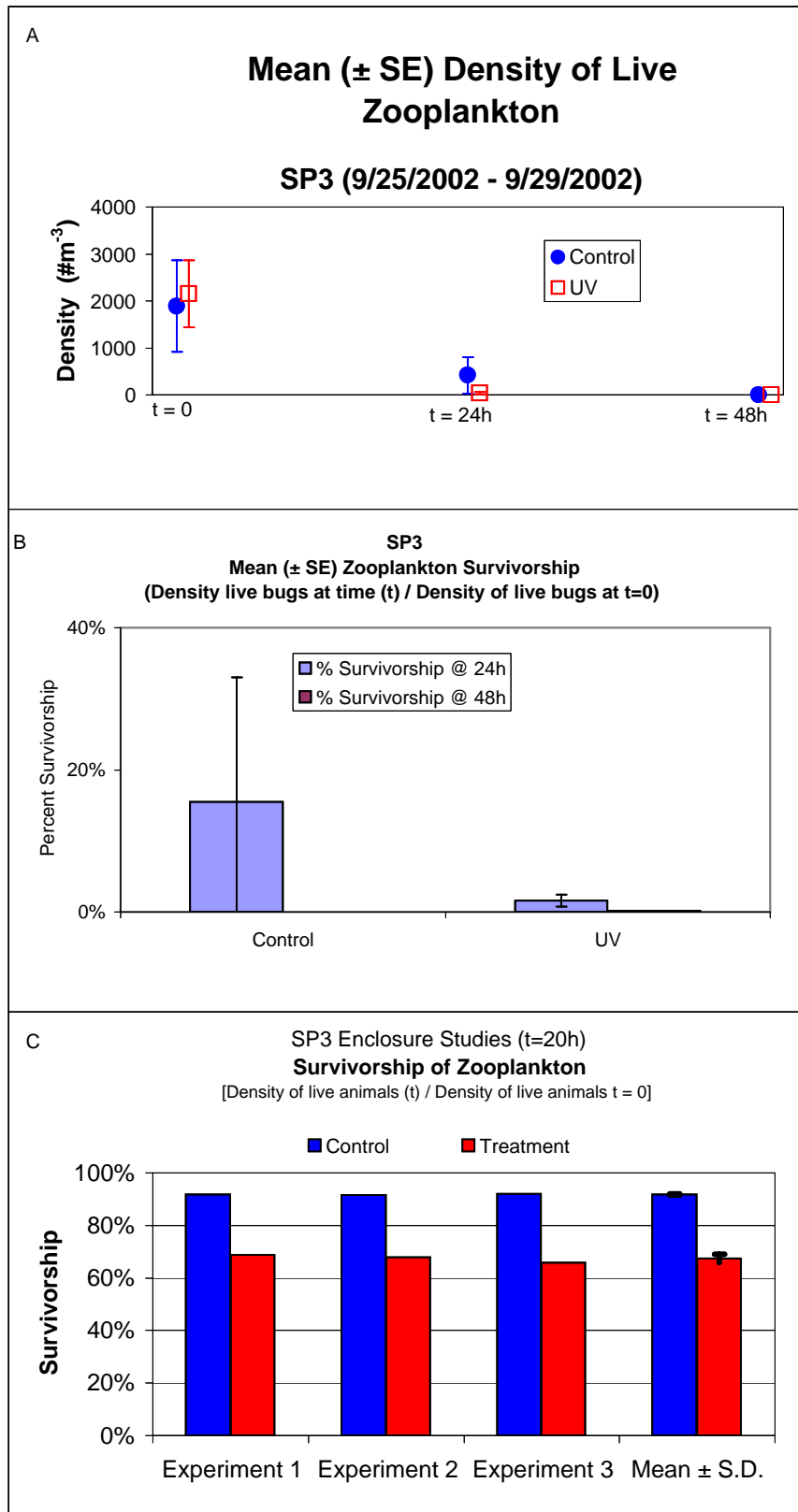


Fig. 10. Density and survivorship of zooplankton during cruise SP3. (A,B) Data from ballast tanks. (C) Data from enclosures.

Zooplankton Composition in SP3 Enclosures

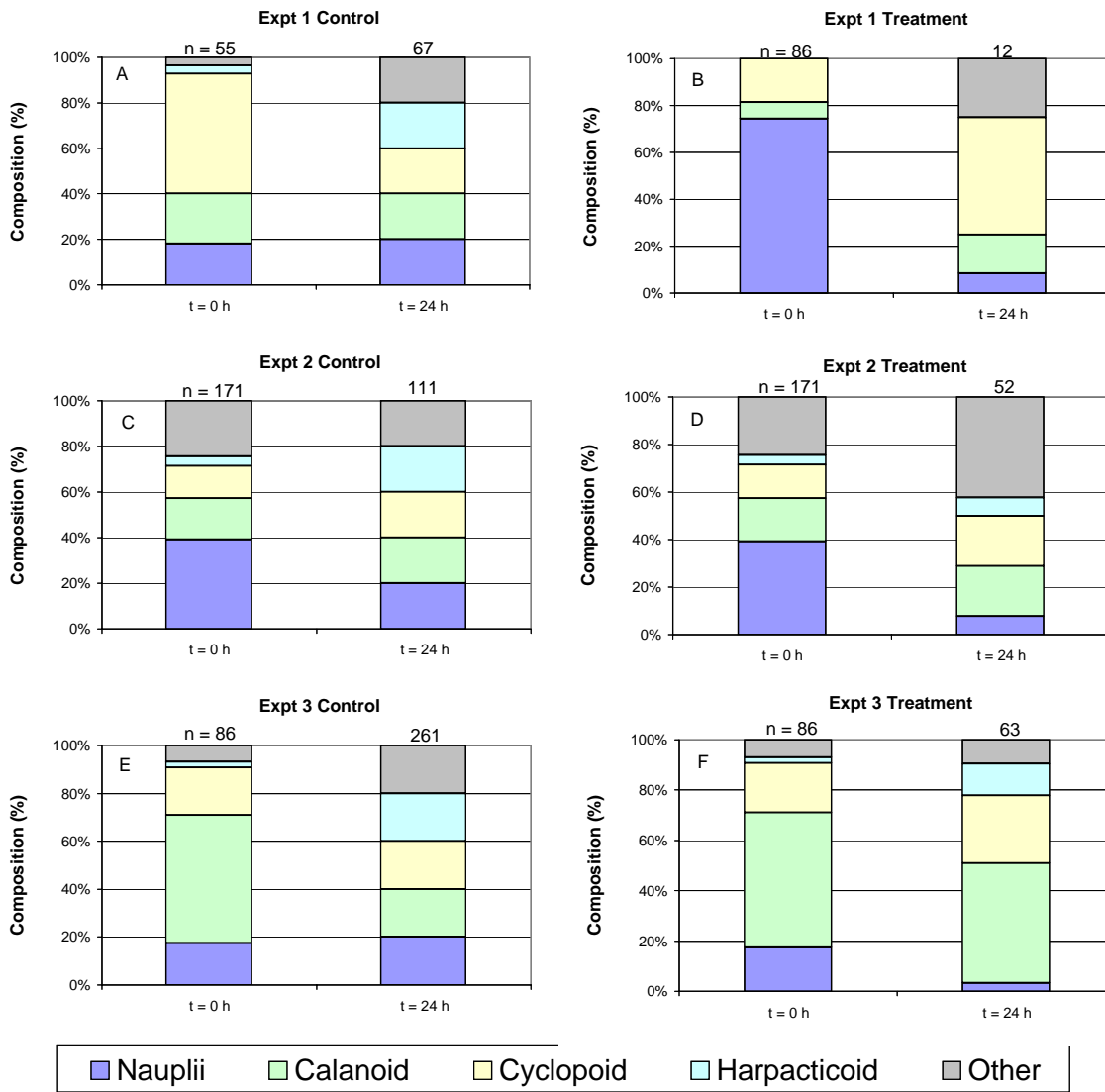


Fig. 11. Taxonomic composition of zooplankton in enclosure experiments performed on cruise SP3.

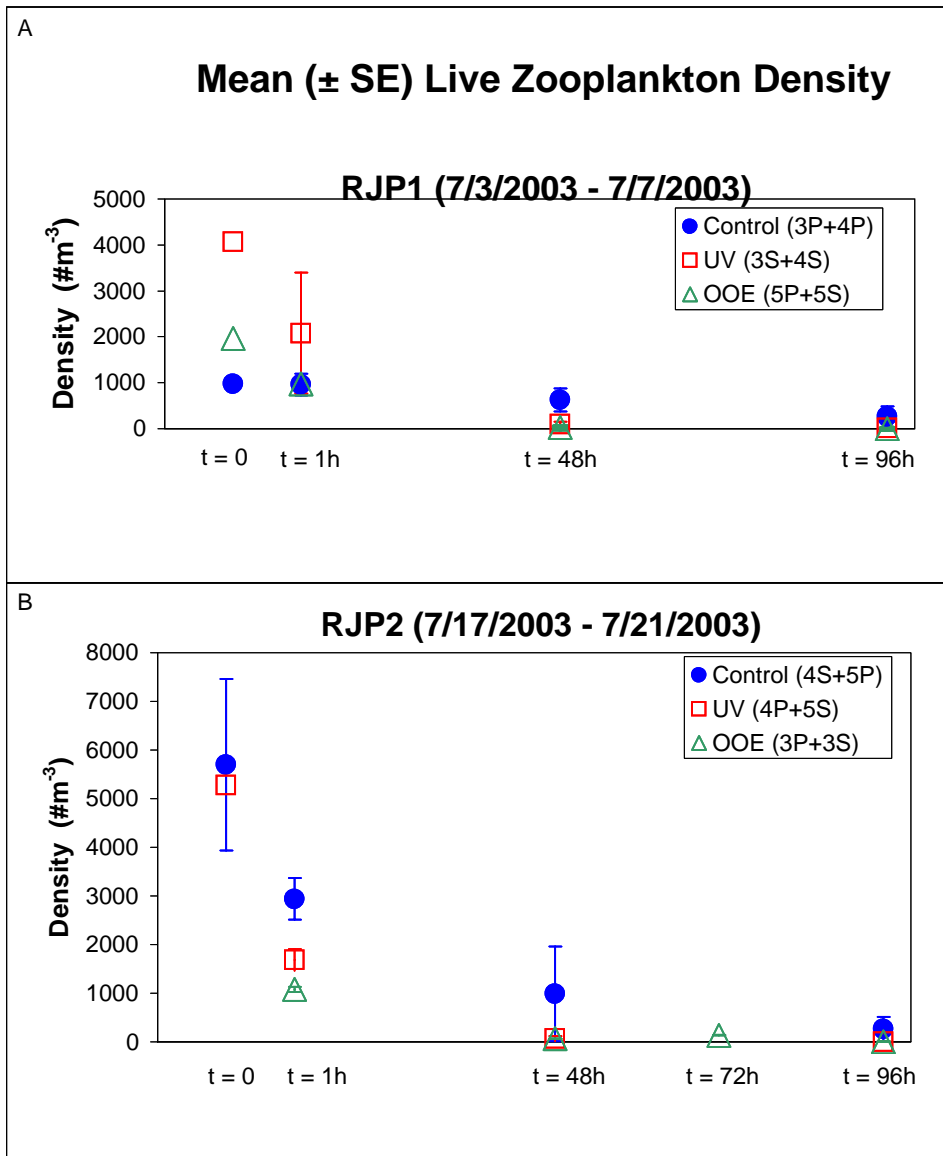


Fig. 12. Live zooplankton density in ballast tank experiments conducted on cruises RJP1 and RJP2.

Mean (\pm SE) Zooplankton Survivorship
(Density of live animals at time (t) / Density of live animals at
t=0)

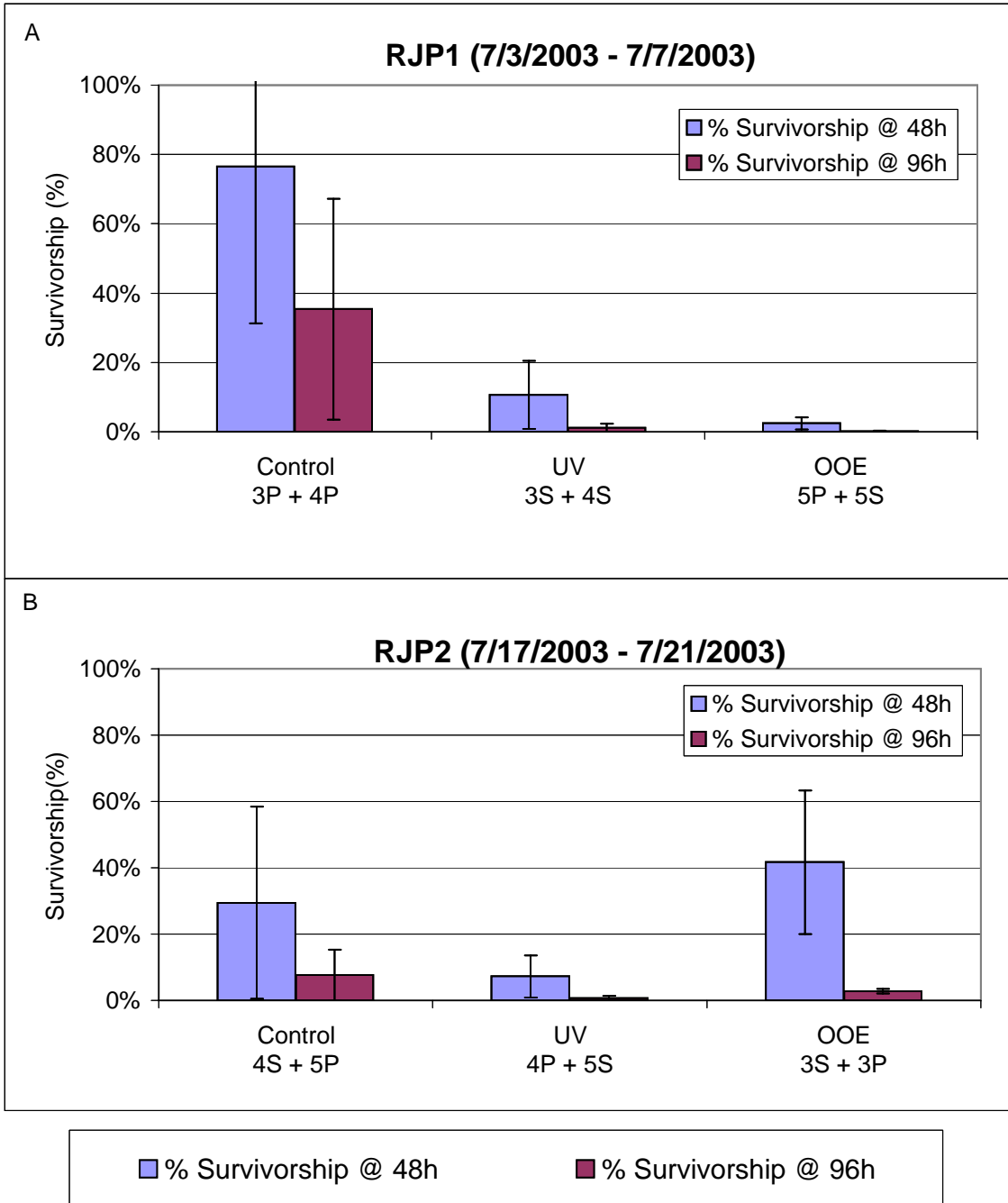


Fig. 13. Zooplankton survivorship in ballast tank experiments conducted on cruises RJP1 and RJP2. Note that survivorship is referenced to the density of live animals noted at time zero.

RJP 1 (7/3/2003 - 7/7/2003) Zooplankton Composition

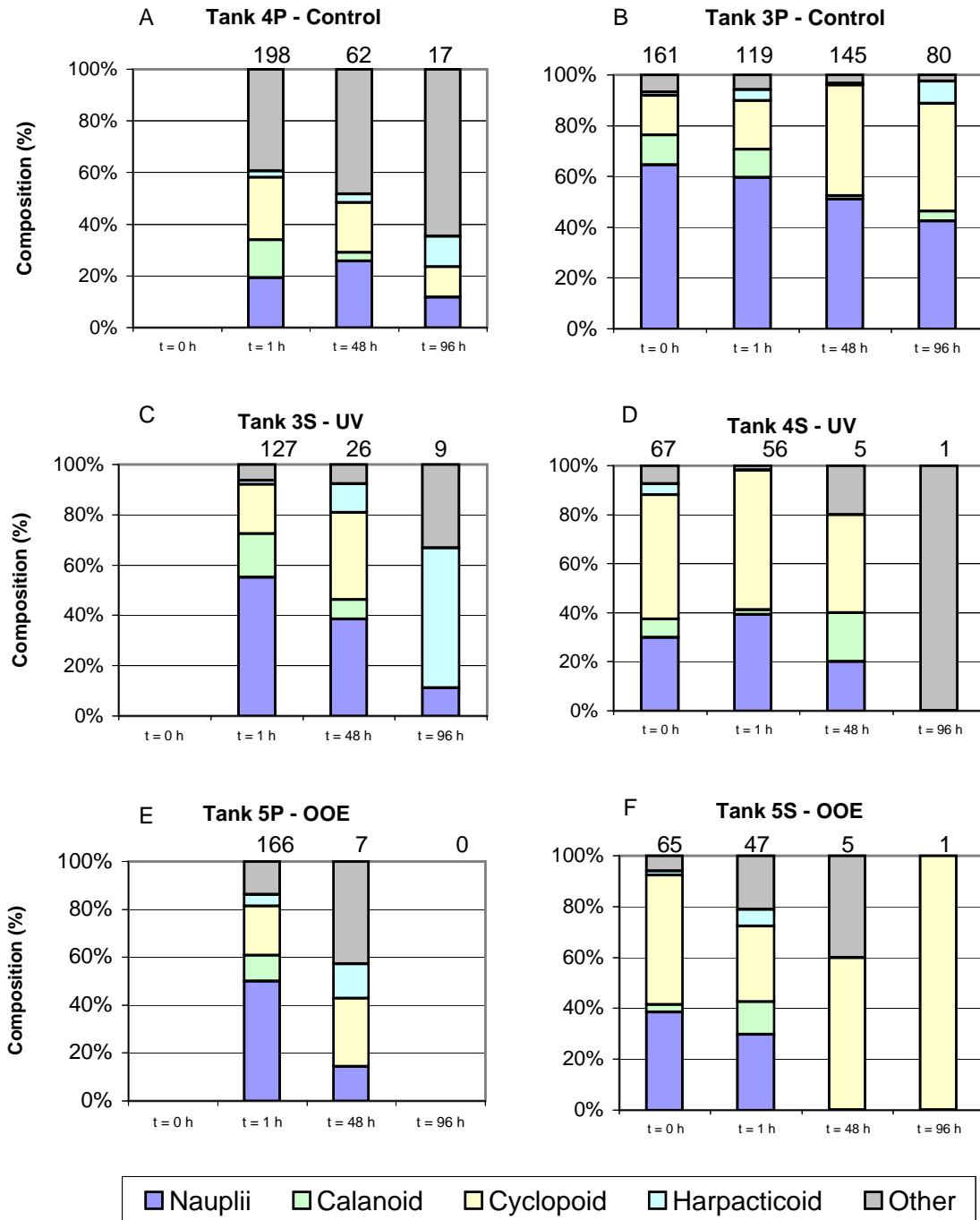


Fig. 14. Taxonomic composition of zooplankton in ballast tank experiments performed on cruise RJP1.

RJP 2 (7/17/03 - 7/21/03) Zooplankton Composition

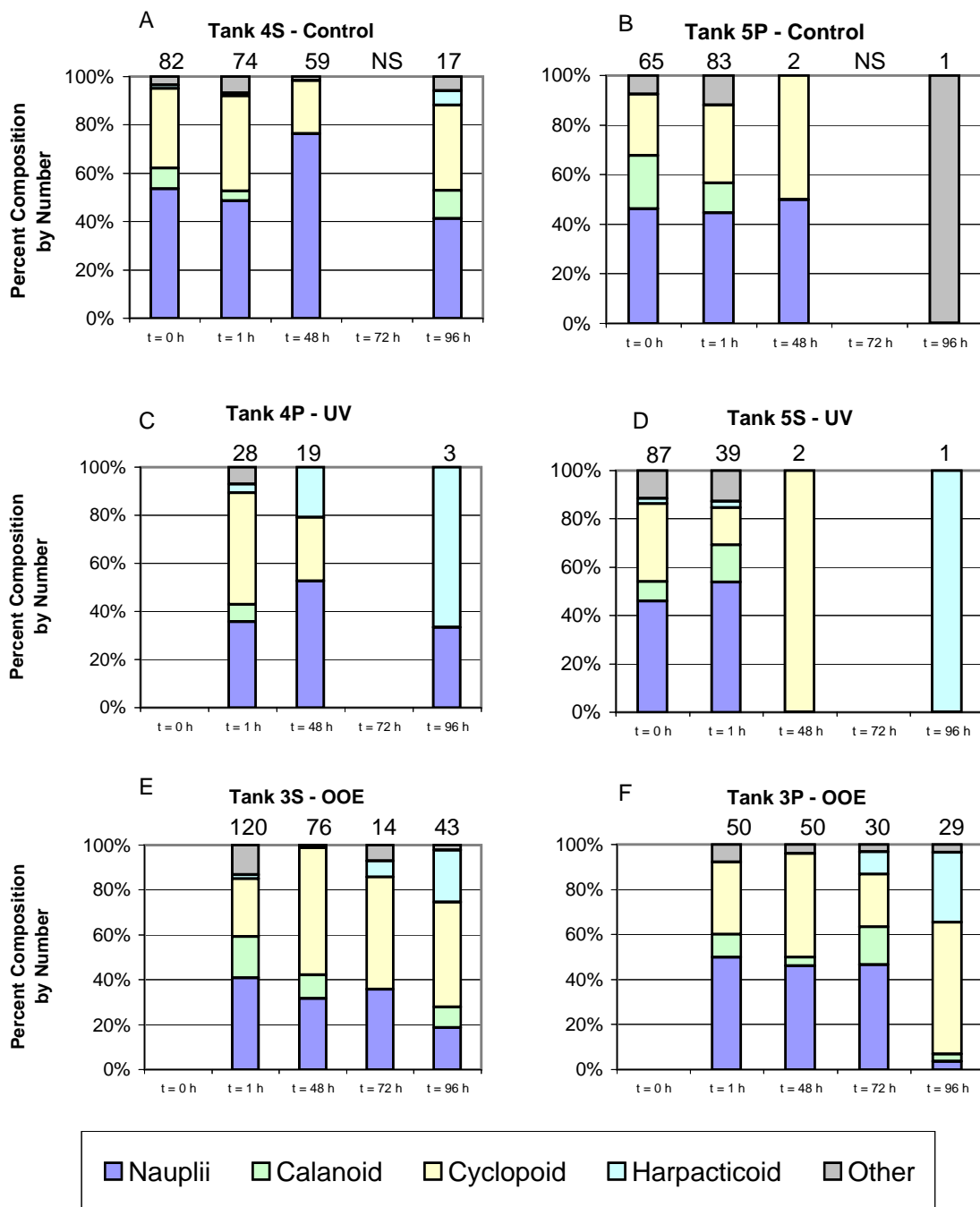


Fig. 15. Taxonomic composition of zooplankton in ballast tank experiments performed on cruise RJP2.

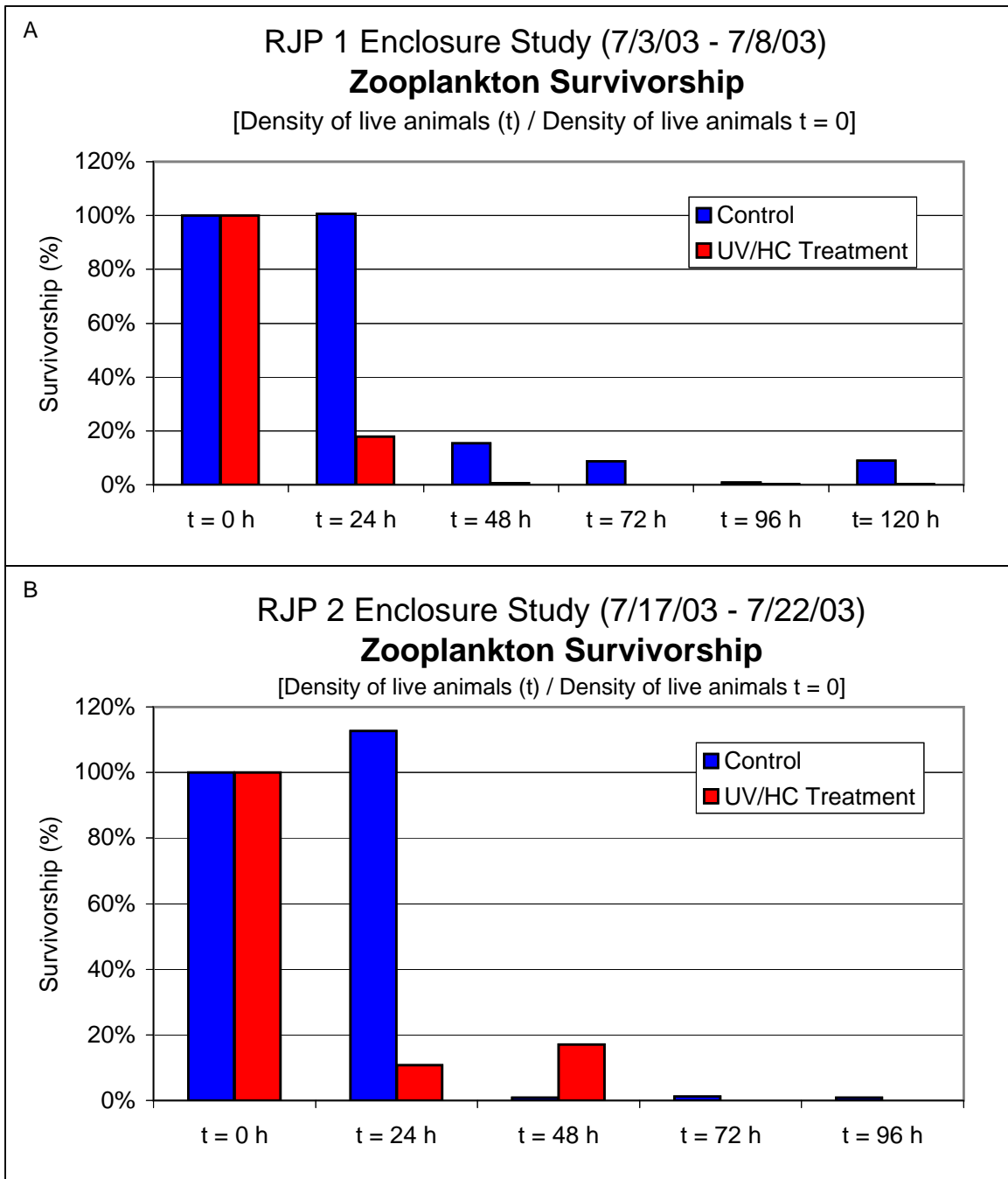


Fig. 16. Survivorship of zooplankton from enclosure experiments conducted on cruises RJP and RJP2. Note that 'missing' data bars for UV/HC treatments indeed indicate 0% survivors after 48h; that is, no live animals.

Zooplankton Composition in Enclosures

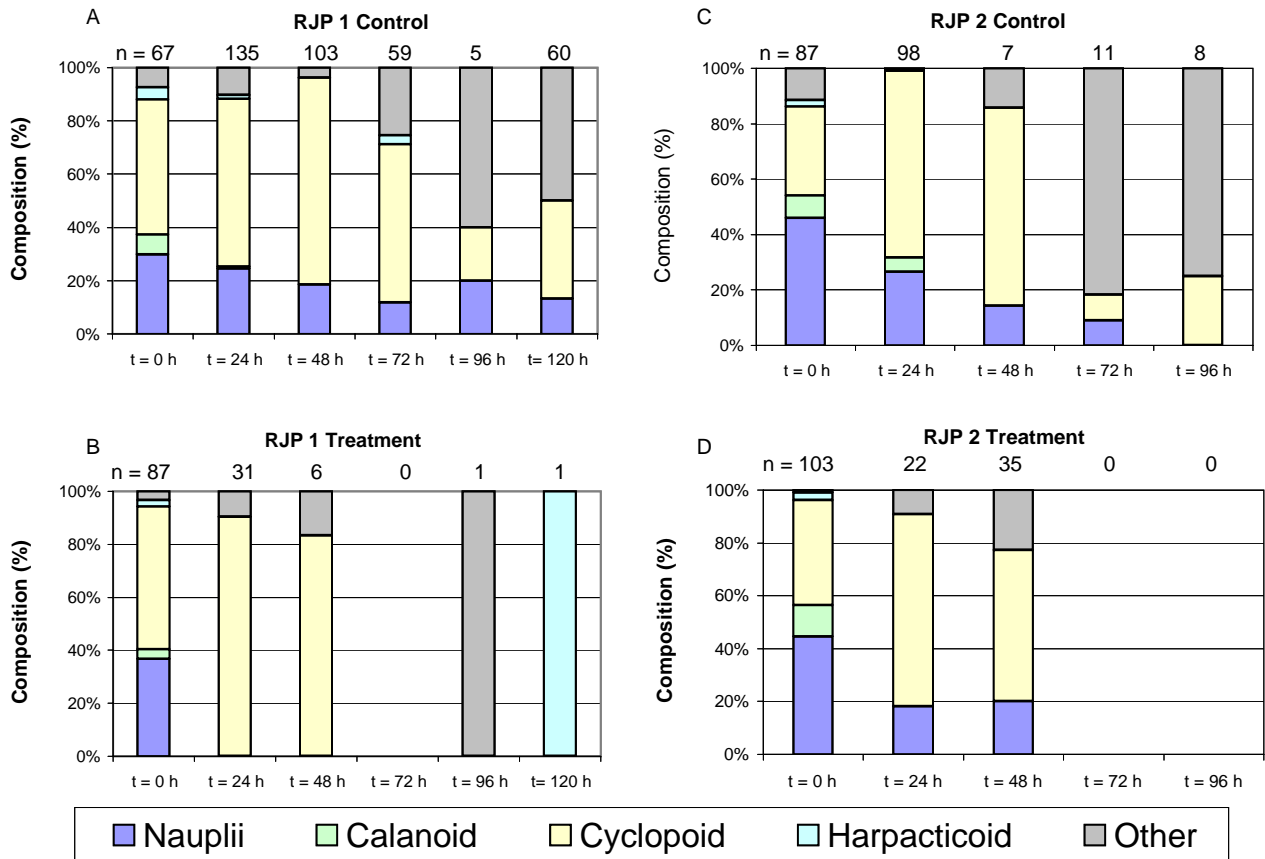


Fig. 17. Taxonomic composition of zooplankton in enclosure experiments conducted on cruises RJP1 and RJP2.

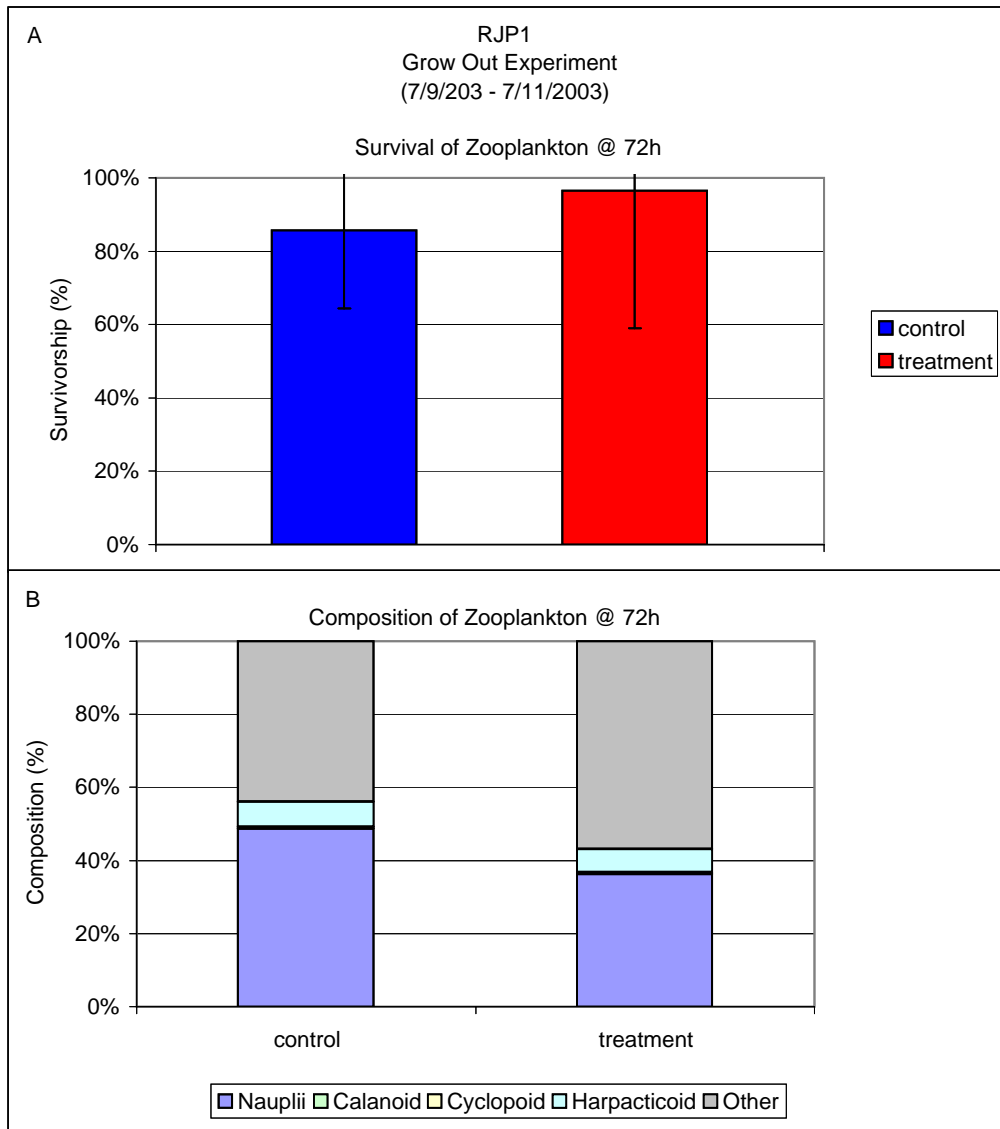


Fig. 18. Survivorship and taxonomic composition of zooplankton in post-cruise grow-out experiments conducted. Survivorship was referenced temporally ($t=0$) to the final deballasting of Honolulu Harbor water collected 5 days prior. The value of survivorship is much higher than that reported in Fig 13.