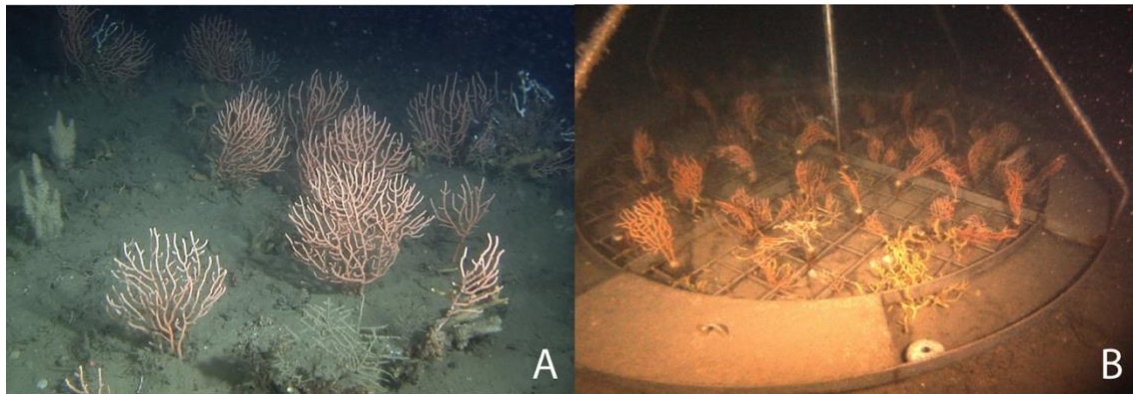


### **Box 1: Bycatch gorgonians transplanted onto artificial structures**

Two pilot restoration actions have been developed within the MERCES and ShelfReCover projects simultaneously in the North-Western Mediterranean Sea and North Atlantic Ocean, focused on the restoration of CWC gardens. Both areas are dominated by gorgonian species, with slow growth, high longevity, and low reproductive potential. Assemblages of *Eunicella cavolini* dwell on the continental shelf of Cap de Creus marine area (Western Mediterranean Sea) (Box 1 Fig. 1A), while octocorals *Dentomuricea aff. meteor*, *Viminella flagellum*, *Callogorgia verticillata* and *Paracalyptrophora josephinae* dominate coral communities on the Condor Seamount (Azores). Small-scale fishing (bottom longlines and trammel nets) interact with gorgonians, which are easily entangled in fishing nets and longlines. Such impact results in overall loss of biodiversity and the ecosystem services that CWC gardens provide, increasing their vulnerability and time scales for recovery. Thus, the development of restoration techniques is necessary to promote their conservation.

The techniques for transplantation of gorgonians collected from artisanal fishers onto artificial structures, were assessed in both areas. In Cap de Creus, 120 gorgonians were transplanted onto three stainless steel structures (40 colonies onto each structure with an outer diameter 2 m) (Box 1 Fig. 1B). Likewise, in Azores, they were transplanted onto square PVC structures. Artificial structures were then deployed at 85 m depth on the continental shelf of Cap de Creus, and at 230 m depth on the Condor seamount. One year after the deployment, ROV monitoring showed transplant survivorship ranging from 30-100% per species (Montseny et al., 2019; Carreiro-Silva et al., submitted). Specifically, on the Mediterranean continental shelf,  $87.5 \pm 9.0\%$  (mean  $\pm$  SD) of the transplanted gorgonians were still in place and alive, with no signs of necrosis (Montseny et al., 2019). These restoration experiments have demonstrated the feasibility of transplanting CWC gorgonians back to their natural habitat, conveying important lessons that should be considered for scaling of future restoration activities. If available, using bycatch corals

from small scale fisheries seems a feasible way to get the corals needed for restoration actions.



**Box 1 Figure 1 (A)** Cold-water coral garden on the Mediterranean continental shelf, dominated by the gorgonian *Eunicella cavolini* (100 m depth). **(B)** *Eunicella cavolini* colonies, recovered from fishing by-catch, transplanted onto an artificial structure deployed at 85 m depth on the continental shelf. Photo credits: ICM-CSIC and UB.