Size-selective harvesting, where large individuals of a particular species are preferentially taken, is a common phenomenon in both terrestrial and aquatic habitats. In case of marine species, selective harvesting of large individuals is not only widespread among artisanal harvesters and poachers but in many cases is also mandated by fisheries managers. As a result, long-term declines in body sizes of many marine species are becoming evident. For example, a comparison of historical records and modern field surveys indicate that body sizes of many intertidal gastropod species in southern California have steadily declined over the past 100 years. Yet we know little about how such reduction in body size affects the biology of these species. In addition, there is emerging evidence that reduction in body size of harvested species can also affect other species in the community by altering interspecific interactions. Here we discuss how size-selective harvesting of marine species can have community-wide effects including impacts on ecosystem function. No species lives in ecological isolation, so in order to understand the long-term consequences of size-selective harvesting we need to look at not just the direct impacts on the harvested species but also indirect effects on other species in the community.