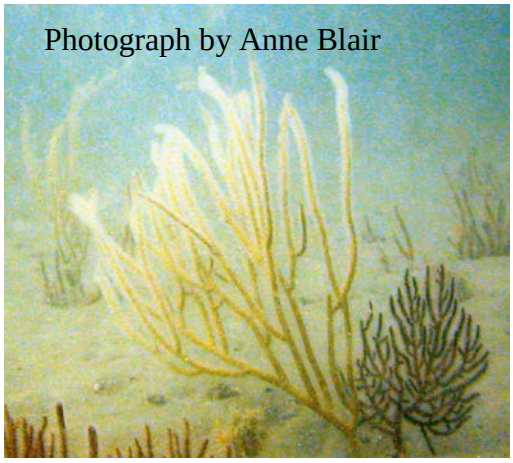
Photograph by Anne Blair

Colorful Sea Whip
Leptogorgia virgulata

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DESCRIPTION

Taxonomy and Basic Description

The colorful sea whip was first described by Lamarck (1815) and named *Leptogorgia virgulata*. Gorgonians, or soft corals, such as the sea whip, belong to the suborder Holaxonia. These colonial cnidarians are so named because they lack the permanent, rigid skeleton of scleractinian hard corals. As octocorallians, they possess 8 tentacles. Branches in gorgonians are arranged around a central axis. *Leptogorgia virgulata* colonies are moderately branching into whip-like stalks. Polyps alternate in rows along two sides of each branch; rows are separated by distinct grooves on older main branches. The color of the colony is variable and may range from shades of purple, red, orange, yellow or white. Sea whip polyps are translucent to white. The typical adult size of the colorful sea whip is 15 to 60 cm (6 to 24 in.) (Ruppert and Fox 1988).

Status

The colorful sea whip is one of many coral species that commonly colonizes hard bottom substratum in high salinity areas of South Carolina estuaries and coastal shelf habitats. It serves as an indicator species that is representative of the sessile epifauna that form essential reef habitats utilized by many economically valuable or ecologically important species. These include: snapper (*Lutjanus*), grouper (*Epinephelus*), porgy (*Calamus*) and Black Sea Bass (*Centropristis striata*) (Van Dolah et al. 1987). The colorful sea whip was selected over other fauna as a SWAP indicator species because it is one of the most pervasive and abundant species inhabiting hard bottom substratum. The colorful sea whip also serves as the home or prey for several specialized associates including the Atlantic wing oyster (*Pteria colymbus*), brown barnacles (*Conopea galeata*), a tissue-feeding nudibranch (*Tritonia wellsi*), and the shrimp, *Neopontonides beaufortensis* (Patton 1972; Ruppert and Fox 1988). No long-term studies have been completed, however, to assess the population status of the colorful sea whip.

POPULATION SIZE AND DISTRIBUTION

The colorful sea whip is a common shallow water gorgonian species that occurs over a latitudinal range that extends from Brazil to the Chesapeake Bay and perhaps as far north as the “Bay of New York” (Bayer 1961). This species inhabits estuaries and coastal sites up to 20 m (66 ft.) or more in depth (Van Dolah et al. 1987; Blair 2003).

Research indicates that the colorful sea whip is a dominant octocoral in the coastal shelf areas off the Southeastern United States (Van Dolah et al. 1987). It is commonly found in high salinity estuarine habitats where tidal scour has exposed hard substrata (Van Dolah, unpubl. data).

The colorful whip coral is relatively common in estuarine, coastal, and offshore habitats in South Carolina. There are, however, no known estimates of population size or population trends. Additionally, factors that may limit the population are unknown.

HABITAT AND NATURAL COMMUNITY REQUIREMENTS

Sea whips grow abundantly on shell live bottoms in sounds and tidal creeks but can also be found on floating docks, rock jetties, and oyster reefs (Ruppert and Fox 1988). They are also familiar constituents of hard-bottom reefs, which are a common topographic feature of the continental shelf off the Southeastern United States. Sea whips are also found on artificial reefs constructed in this region.

Unlike many gorgonian species, the colorful sea whip does not reproduce asexually through cloning or fragmentation. Fertilization is external and larvae spend 3 to 20 days in the plankton before settlement and metamorphosis. All recruits are derived from the successful settlement and survival of planktonic larvae, which require adequate substrata such as low-relief rocky outcrops or extensive hard bottom (Gottelli 1991).

CHALLENGES

Occasionally, the colorful sea whip is damaged by shrimp trawl nets; studies have found that the overall effects were a loss of 3.9% to 38% during respective census periods (Van Dolah et al. 1987; Tilmant 1979).

Another potential threat to sea whip populations is offshore disposal of dredged material. A current study is investigating changes in sponge and coral communities at select hard bottom reef sites adjacent to the Charleston Ocean Dredged Material Disposal Site (ODMDS). Findings to date suggest that sessile invertebrates, including the colorful sea whip, are experiencing natural fluctuations in community structure and suffering limited, if any, impacts from the large-scale disposal operations occurring at the ODMDS (SCDNR unpub. data). Coral populations that are located closer to disposal activities in other areas, however, could be negatively impacted by burial or decreases in the aerial extent or damage to the coral beds.

A study of the physiological effects of dredged material disposal on the oxygen metabolism of a related gorgonian octocoral, *Leptogorgia hebes*, was completed in 1992 by the EPA in conjunction with the University of Georgia's Department of Ecology. The results of that study suggested that while coral recovery from single episodes of low-level sediment exposure is likely, recovery is more difficult following repeated low-level exposures or single episodes of high-level exposure. Both long-term responsiveness and immediate short-term productivity rates were inhibited by exposure to sediment concentrations above 100 mg/l [15 NTU (nephelometric turbidity units)] (Porter 1993). Since dredging occurs frequently in the Charleston area, the

potential exists for this activity to adversely affect the population size or reproductive ability of whip corals.

Populations of the colorful sea whip that inhabit sounds and tidal creeks may be subjected to increased sedimentation rates, nutrient levels (eutrophication), or contaminants due to terrestrial runoff from suburban, urban, industrial, and agricultural areas. The physiological impacts from exposure to elevated sediment concentrations in nearshore populations are described in the previous section. The possible effects of exposure to eutrophication could include impacted growth rates, reproductive ability, or mortality (Jones and Endean 1976).

CONSERVATION ACCOMPLISHMENTS

Inshore state waters that were historically open, including the sounds and Bulls Bay, were closed to shrimp trawling in 1986. Sea whips are common in these high salinity estuaries. Since 1978, SCDNR has monitored offshore dredge material disposal in Charleston in an effort to minimize the effects of dumping on hard bottom reef communities. Likewise, the South Carolina Estuarine and Coastal Assessment Program (SCECAP) monitors habitat quality of estuarine waters statewide and identifies specific sites with degraded water or sediment quality conditions as well as provides estimates of the overall condition of State waters (Van Dolah et al. 2004).

CONSERVATION RECOMMENDATIONS

- Conduct mapping studies of bottom habitats to better define the location of hard bottom reef areas that include sea whips.
- Examine the long-term population trends of sea whips.
- Further investigate the relationships between sea whips and commensal or cryptic species that live in association with sea whips.
- Establish detailed baseline monitoring data to allow for a better understanding of the impacts of offshore dumping on hard bottom reef habitats.
- Conduct studies on the impacts of increased sedimentation rates, nutrient levels, and contaminant levels on estuarine populations.
- Educate commercial trawl fishermen on the damage trawling causes to hard bottom reef species, and collaborate with the shrimp industry to avoid trawling near sea whip communities.
- Cooperate with the United State Army Corps of Engineers to reduce sedimentation and burial of coral assemblages near disposal sites.
- Work with communities and municipalities to reduce runoff by improving and implementing Best Management Practices (BMPs).
- Work with partners to develop ways to reduce nutrient runoff that exacerbates the effects of eutrophication.
- Develop and enforce a management plan for protecting live bottom communities in South Carolina State waters.

MEASURES OF SUCCESS

Once the information regarding population distribution and trends in State waters has been documented, development of both population models for live bottom communities and a conservation plan for sea whip in South Carolina would benefit this species. Documenting stable population trends for sea whips and other members of live bottom communities within South Carolina waters would be the ultimate measure of success for this community.

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