



ENVIRONMENTAL SERVICES

BACKGROUND

Environmental concerns pose some of the most important and challenging issues occurring today. Continually evolving technologies and environmental information allow for improved monitoring and scientific investigations of routine and unusual situations. Maintaining an edge collecting and interpreting environmental data requires trained professionals with the right combination of expertise and hands-on experience. SBI professionals combine knowledge and experience with leading edge technologies to develop practical and scientifically defensible solutions to complex environmental problems in marine, aquatic, or terrestrial environments.

EXPERIENCE

Our experienced professionals offer state of the art equipment combined with innovative approaches to provide solutions to a variety of problems:

- **Biological Baseline Studies** - SBI professionals have completed biological assessment services to establish the baseline biological conditions of a proposed project or activity. Using literature searches, background research and field studies, we accurately characterize the composition and sensitivity of marine, aquatic and terrestrial flora and fauna.
- **Water Quality Surveys** - SBI staff has conducted extensive detailed water quality investigations to characterize water bodies for temperature, salinity, dissolved oxygen, pH, turbidity, as well as physical (currents and flow), chemical (nutrients), and biological (chlorophyll) components.
- **Environmental Impact Assessments** - SBI has extensive experience with the collection and interpretation of biological, chemical, and physical data to assess impacts related to activities such as dredging, beach restoration, oil and gas activities, and development.

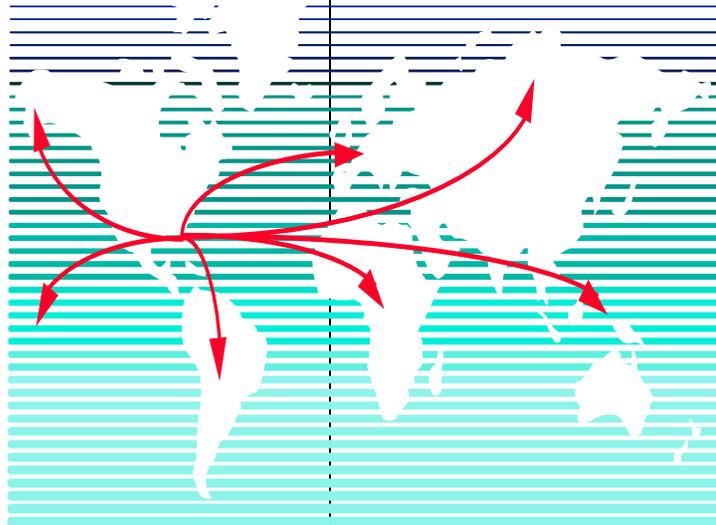
- **Natural Resource Damage Assessment** - SBI professionals have experience assessing natural damages resulting from the unplanned release of environmentally hazardous materials and other events as well as input to minimize environmental impacts during response operations.
- **Environmental Monitoring** - SBI professionals have extensive experience conducting monitoring programs to determine immediate and long term environmental effects. Experience includes designing studies, implementation of data collection, data management and interpretation, quality assurance, and overall project management.

PROJECT MANAGEMENT

Project management is always implemented to perform superior quality services with the clients best interest in mind. Our management philosophy is to understand the needs of the client and structure our service and approach accordingly; to define discrete tasks within a project and define budgets, deliverables, and schedules, to carefully monitor the project as it progresses; and to maintain an open communication with the client to allow feedback both during and after the project. Careful monitoring of all projects allows corrective action in an efficient and timely manner and prevents unnecessary expenditures of time and money.

QUALITY ASSURANCE

All studies implemented by SBI are conducted under strict quality control procedures. The SBI quality assurance program provides well defined guidelines and objectives for conducting all scientific and technical investigations. All investigations undergo severe in-house scrutiny to ensure that data and study results are accurate and scientifically defensible.





Environmental Services

Natural Resource Damage Assessment (NRDA)

Damages to natural resources result from unplanned incidents such as vessel groundings, oil spills, dredging activities and construction related events. While some incidents are planned and mitigated for in advance, injuries to natural resources are typically the results of human error



Injured Coral Reef

and result in emergency response and actions. Rapid pro-active response by a potentially responsible party (PRP) is the best way to avoid further injury during response activities. It is critical that scientific and technical expertise be utilized during response planning as well as during environmental impact assessment.

Sea Byte Inc. provides scientific expertise in the field of natural resource injuries to minimize further injury and ensure that the best possible solution to an incident is implemented. In some cases (eg. vessel salvage), this entails survey work and additional data collection to minimize and/or prevent further injury. In other cases, this may simply be making recommendations and suggestions concerning the procedures that will be used during incident response. Sea Byte Inc. personnel have extensive experience regarding injury minimization that can/should be implemented during emergency response.

Sea Byte Inc. personnel have worked successfully with initial emergency responders during many incidents to minimize environmental injuries.

Following successful incident response, the injury to natural resources that occurred as a result of the incident will be investigated with the intention of assessing injury and identifying necessary and suitable restoration actions. In

some cases, the trustee will implement a natural resource damage assessment (typical in oil spill incidents) and in other cases the trustees will expect the PRP to implement the NRDA under their guidance and supervision. In other cases a joint NRDA effort between the Trustees and PRP representatives will be conducted and data are shared. Should a trustee implement their own NRDA, the PRP may also want (and is entitled) to conduct an independent NRDA.



Flushing Oiled Mangroves

Sea Byte Inc. has experience conducting NRDA studies in a variety of marine and coastal habitats including mangroves, sea grasses, hard bottom habitats and coral reefs. Providing state of the art scientific data collection and personnel that are recognized experts in environmental impact assessment, Sea Byte Inc. has successfully responded to many NRDA related incidents. Sea Byte Inc. personnel have provided scientific expertise and representation during damage claims that range from simple to multi-million dollar claims that take years to settle.

The NRDA process requires careful planning and technical expertise from the onset of a response through the restoration process. Considerations that must be included in the NRDA process

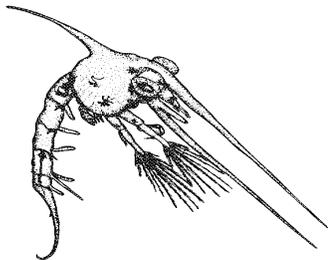
include environmental, legal, and economic (including limitation of liability issues). Our experience and expertise allow us to keep clients informed so that critical technical decisions of the NRDA process can be implemented in an appropriate manner. Sea Byte Inc. has experience working closely with natural resource Trustees to obtain results that are agreeable for both PRP and Trustee personnel.



Vessel Aground on Coral Reef

OVERVIEW

Establishing biological baseline conditions at a location prior to a proposed activity is essential in predicting environmental impacts. Systematically collected accurate data concerning the biological communities in a location are a prerequisite for environmentally sound decision making. The diversity of biological habitats and communities mandate the need for a variety of investigation techniques and equipment. A knowledge of the ecological system is also required to ensure that less obvious elements of a community are not overlooked or omitted while determining baseline conditions. At Sea Byte, Inc. (SBI) we combine years of hands on experience with leading edge technologies to provide the highest quality data collection and interpretation abilities possible.



EXPERIENCE

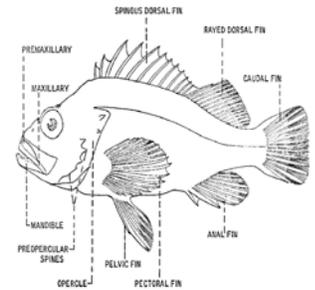
Our experience conducting baseline biological studies is extensive. Some examples of the variety of techniques that SBI professionals have implemented to establish biological baseline conditions include:

- Integrated Video Mapping and Still Photography** - The use of the SBI Integrated Video Mapping System™ and still photography systems is used to accurately document biological baseline conditions of a site. It is critical to collect the highest resolution data possible to allow accurate taxonomic identifications and community characterizations. SBI professionals have experience utilizing a variety of underwater systems and techniques including remotely operated vehicles and submersibles as well as simpler techniques including towed and diver operated underwater video and still photography systems.



Coral Reefs: the most diverse habitat known

- Side Scan Sonar Mapping** - Side scan sonar provides a powerful tool for locating potential environmentally sensitive biological communities. Combining side scan sonar investigations with detailed ground-truthing and photodocumentation facilitates cost effective and accurate identification and characterization of large areas for environmentally sensitive communities. SBI professionals have experience designing and implementing studies using side scan sonar for habitat identification, characterization, and mapping.
- Positioning and Navigation** - Accurate baseline characterization surveys and associated mapping require accurate and repeatable positioning during data collection. SBI professionals have extensive experience utilizing a variety of navigational systems including, DGPS, and range-range, and range-azimuth systems. Our capabilities also include the equipment and knowledge to post-process information and produce high quality accurate products.



TECHNOLOGY

Sea Byte employs state-of-the-art equipment that may include computer controlled ROV's equipped with sonar and sophisticated camera systems or diving scientists experienced with characterizing environmental habitats. Data are gathered and processed on computer databases designed specifically for a project. Information is stored on computer for retrieval and comparison during future projects. Reports are concise, typically computer generated, and often include GIS maps, CAD drawings, color graphics and digitized video images.

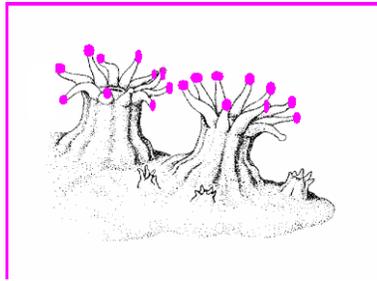


Environmental Services

Environmental Monitoring

BACKGROUND

Monitoring to assess environmental impacts requires the collection and interpretation of scientifically defensible data. Data collection is typically a complex process requiring detailed planning and management. Most monitoring efforts require the collection of multidisciplinary data often including chemical, physical, and biological investigations. From the on-set, environmental monitoring programs must be designed with specific objectives to answer well defined hypotheses. During all phases, environmental



monitoring should be conducted by experienced professionals implementing proven protocols and utilizing the best available technology. Sea Byte Inc. (SBI) professionals offer the ability to design and implement defensible monitoring programs to assess and document environmental impacts.

EXPERIENCE

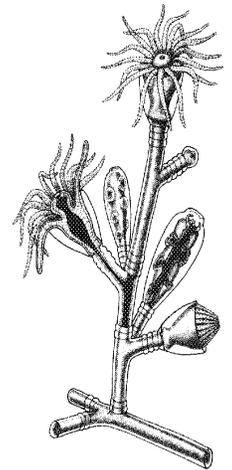
Our professionals apply state of the art equipment and innovative approaches to provide monitoring programs designed to investigate a variety of activities.

- **Discharge Monitoring** - Fate and effects monitoring studies have been conducted to identify environmental impacts associated with a variety of industrial discharges including those related to oil and gas activities, wastewater treatment facilities, and municipal utilities.
- **Grounding Related Monitoring** - SBI staff have conducted extensive detailed investigations to identify the environmental effects associated with ship groundings. Monitoring is designed and conducted with the intention of determining the success of the restoration effort. Studies



typically include the measurement and interpretation of biological, chemical, and physical parameters.

- **Long Term Monitoring** - Identifying and documenting environmental trends is an important aspect of environmental monitoring. Long term biological monitoring of sensitive habitats such as coral reefs, seagrass beds, coastal wetlands, and artificial reefs provide information concerning the overall community health. If declining communities are noted, concurrent chemical and water quality monitoring are often conducted to try and identify the cause.
- **Response Monitoring** - Monitoring the impact and recovery of natural resources from damages caused by the unplanned release of environmentally hazardous materials and other events is critical in understanding and minimizing future damages. Environmental damages caused by events such as oilspills and ship groundings



provide chances to investigate and learn about the recovery of sensitive habitats for use in future decision-making.

PROJECT MANAGEMENT

SBI professionals have extensive experience managing environmental monitoring programs. We have experience dealing with regulatory agencies and offer a solid background in technical and project management aspects of environmental monitoring including design, implementation, data management, interpretation, and quality assurance. Careful monitoring of all projects allows corrective action in an efficient and timely manner to ensure that data needs are met using timely and cost-effective solutions.



Natural Resource Damage Assessment HABITAT RESTORATION – CORAL REEFS

OVERVIEW

Sea Byte Inc. has provided technical expertise, equipment and personnel to conduct restoration projects in coral reef environments in conjunction with injuries that resulted from the grounding of large ships. Using data collected with the Sea Byte



Reef Stabilization Mats on Bottom

Integrated Video Mapping System (IVMS) a detailed database and characterization of injury types and severity throughout a grounding location have been prepared. The area of injury, location and detailed characterization of the injuries have been used to formulate and implement cost effective restoration projects. These projects often take on many different types of restoration and corrective actions.

RESTORATION

Sea Byte Inc. has been involved in the implementation of a variety of restoration activities related to grounding sites on coral reefs. Providing scientific and logistical expertise very effort has been made to restore the environment to the best possible pre-injury condition using state of the art techniques. On recent projects, several techniques not previously implemented on reef restoration project were used.

To minimize the effects of further reef structure degradation from wave action in areas of severe crushing by a ships hull, reef stabilization mats were deployed to cover and stabilize the injured substrate (See Inset Photo). Mats were laid across the injury area and large

boulders were placed between the mats to provide increased structural complexity and relief. GIS maps created within the IVMS database were used to engineer and plan the restoration activities. Sea Byte personnel provided environmental and logistical input and oversight throughout all of the activities.

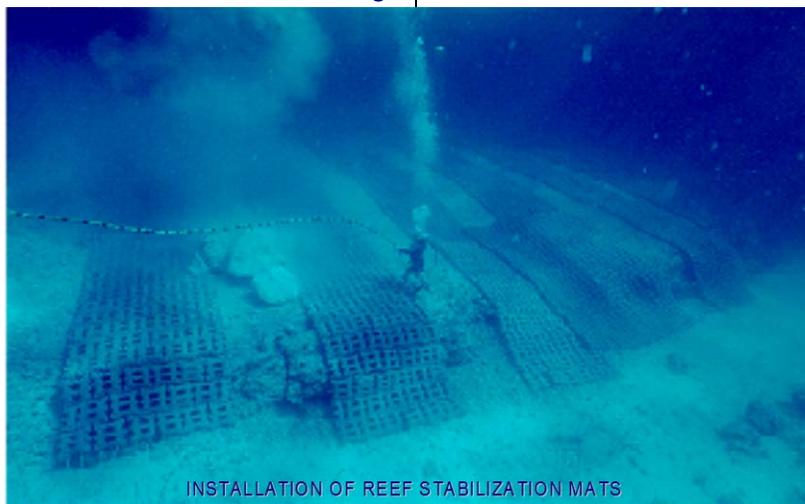
Another problem that often occurs during the grounding of large vessels



Epoxy encapsulated rubble

pertains to the large amount of rubble that is created and strewn on the bottom. In another restoration activity Sea Byte personnel provided expertise and implemented the encapsulation of loose rubble using a new state of the art technique. Instead of removing the large amount of small rubble and debris that occurred on the reef, the large piles of loose material were encapsulated in epoxy forming stable consolidated materials. This minimized the movement and further damage to surrounding habitats that could occur and also eliminated further

damage from turbidity and mechanical action that would occur as a result of dredging or removing the material from the reef. GIS maps and the IVMS database were also used to implement this activity.



INSTALLATION OF REEF STABILIZATION MATS

These two restoration activities provide examples of the innovative restoration activities undertaken by Sea Byte scientists in the past. We believe that every project has unique needs and provides continuing opportunities to improve the quality of restoration activities.