



Point Reyes

National Seashore



NEWS

Searching for and Discovering Life in Tomales Bay

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Point Reyes National Seashore, Gulf of the Farallones National Marine Sanctuary, universities, and community groups have launched an ambitious effort to discover and inventory the organisms occurring in Tomales Bay over the next five years. The project known as the Tomales Bay Partnership for Biodiversity Preservation is the only one of its kind on the West Coast. The goal is to inventory, identify, and describe the thousands of species found within bay waters and along the shoreline. Currently, scientists estimate the bay contains approximately 10,000 species (excluding bacteria and other single celled organisms) with about 2,000 recorded. An overall vision is to develop one of the most complete and thorough marine biodiversity databases ever created. This will serve to provide the basic information needed to make "sound scientifically based" management decisions for preserving the incredible biodiversity of this important coastal estuary.

This past spring, the first in a series of "BioQuests" was conducted on Tomales Bay adjacent to Point Reyes National Seashore in Marin County. The term "BioQuest" is used to describe a method involving a rapid inventory of biological diversity. BioQuests are also tools closely linked with biodiversity, exploration, education, and investigation. For the first BioQuest, students and faculty from Sonoma State University and University of California-Berkeley traveled to rocky sites around the Bay to capture a "snapshot" of the algal biodiversity, including invasive and rare species. During this BioQuest, over 200 species of algae were collected and identified.

Over the weekend of June 7-8, 63 volunteers traveled to Point Reyes to attend a Rare Plant BioQuest. This 3rd annual event drew together members of the local community, agency botanists, students, and plant enthusiasts from around the San Francisco Bay area and beyond to search for undocumented rare plant populations within the Seashore and along Tomales Bay.

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Over the course of the weekend, the groups documented 18 previously unrecorded rare plant populations. These discoveries include new locations for two Federally endangered species, Tidestrom's lupine (*Lupinus tidestromii*) and robust spineflower (*Chorizanthe robusta*), in addition to a number of other rare species including perennial goldfields (*Lasthenia macrantha*), rosy linanthus (*Linanthus rosaceus*), and dune gilia (*Gilia capitata* ssp *chamissonis*).

On July 3, Seashore staff and volunteers are teaming up with the North American Butterfly Association for a Butterfly Count at Point Reyes. We hope this one-day search for butterfly species within a 7.5 mile radius of Mount Vision will net at least 30 of our suspected 80 species of butterflies. The North American Butterfly Association combines butterfly count reports from around the country, which provides important information about the geographical distributions and population sizes of the species counted. The coming year, additional algal, invertebrate (clams, snails, etc.), and lichen BioQuests are planned for Summer and Fall 2003.

The reality of discovering new populations and species that are new to science is possible through these BioQuests. For example, in the past four years, Great Smoky Mountains National Park has discovered 379 species new to science and 2740 species new to the park in their All Taxa Biological Inventory. Their latest area of focus is "sub-visible" biodiversity, including bacterial species and microorganisms. For all types of BioQuests, specimen identification and collection information is synthesized into an accessible electronic database, providing ecological data such as abundance and distribution information.

Tomales Bay is one of the most ecologically significant estuarine areas in the State of California. This 12 mile long estuary was formed by the San Andreas Fault and covers approximately 9,200 acres. The Bay provides critical habitat for numerous threatened and endangered species, invertebrates, fishes, amphibians, flora, avifauna and marine mammals. The Bay supports nearly 40,000 shorebirds and waterbirds that winter along the coast between the San Francisco Bay and Bodega Bay. Although threatened by pollution, sedimentation, and invasive species, Tomales Bay still remains one of the most treasured recreational amenities on the West Coast of North America.

In his book *The Future of Life*, E.O. Wilson states the number of living species on earth is estimated between 7 and 15 million. The number of species identified by taxonomists and scientists to date is only 1.75 million; oddly enough, we have barely discovered the majority of the species believed to be on the planet. One way to increase the Tomales Bay All Taxa Biodiversity Inventory (ATBI) efforts is to train new naturalists and scientists as taxonomists, a declining area of study due to the intensive and long-term focus required. Through the Pacific Coast Science and Learning Center at Point Reyes National Seashore dozens of high school students hired as biological science technicians assist NPS and ATBI researchers in their inventory and monitoring efforts. School-based education efforts include Tomales High School, which was awarded a grant by the State of California to charter a "School within a School," specifically focused on Marine Biology and the ATBI.

NPS Director Fran P. Mainella stated, "This effort is being coordinated through the Pacific Coast Science and Learning Center at Point Reyes National Seashore." The Learning Center was funded by the Natural Resource Challenge, a five-year

national initiative to provide funds to ensure preservation and protection of park natural resources. Director Mainella added, "The Natural Resource Challenge is a multi-year program that provides information, expertise, and tools to help understand and protect the nation's natural heritage managed by the National Park Service. President Bush's commitment to the Natural Resource Challenge has added more than \$104 million to the NPS budget."

The information generated from this inventory will provide support for management and conservation decisions by the Tomales Bay Watershed Council, the National Park Service, the National Marine Sanctuary Program and other local stakeholders. This knowledge could have significant economic, scientific and cultural consequences. For example, the algal BioQuest located an exotic, invasive tunicate species (*Didemnum*) in Tomales Bay that can be detrimental to oyster populations. The ATBI has given us an early warning signal that this species may be a problem in the future. Management implications are not known at this time, but in some areas the tunicate populations remain at low densities for several years before becoming a problem.

This is a collaborative project already involving 32 scientists, educators, and community leaders from more than 25 different institutions. Point Reyes National Seashore Association, a 501(c) 3 non-profit, is acting as the lead organization for this cooperative initiative. The purpose of this collaborative project is to 1) preserve, protect and restore the biological diversity of Tomales Bay, 2) provide the scientific foundation needed for public policy to effectively address threats to this ecosystem, 3) raise public consciousness on stewardship and conservation of marine systems, and 4) develop marine conservation recommendations that will support a sustainable bay ecosystem.

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