

# Pacific Coast Science & Learning Center

U.S. Department of the Interior  
National Park Service  
Point Reyes National Seashore / San Francisco Bay Area Network of National Parks

## Stewardship through Science:

2002 - 2007



*Phyllaplysia taylori*, a nudibranch from the Tomales Bay Biodiversity Inventory.

## HIGHLIGHTS

**RESEARCH PUBLICATIONS RISE** - Researchers generated 35 peer-reviewed publications providing new insights into environmental processes that help inform park management.

**RESEARCH PROJECTS INCREASE** - Research projects at Point Reyes National Seashore more than doubled from 53 in 2002 to 113 in 2006.

**PCSLC IN THE NEWS** - National Public Radio highlighted the PCSLC's rapid fungi inventory that included over 200 volunteers and more than a dozen scientists and taxonomists. The project has increased the park's species list from 110 to over 410 and discovered at least 9 species new to science.

PCSLC research on impacts of overfishing on seabirds was highlighted in the journals **Science** and **Nature**.

## HONORS AND AWARDS

2002 Department of Interior Environmental Achievement Award

2003 Tomales High School awarded California magnet school status (\$300,000 award) in partnership with PCSLC

2006 Regional Freeman Tilden Interpretation Award

## CONFERENCES AND SEMINARS

2006 West Marin Map Conference (>200 attendees)

PCSLC Seminar Series (42 seminars, average 20 attendees)

Joint I&M / PCSLC Science Communication Workshop

## Mission Statement

*The Pacific Coast Science & Learning Center is one of 17 Research Learning Centers at U.S. National Parks working to increase the effectiveness and communication of research and science through:*

- Facilitating the use of parks for scientific inquiry.
- Supporting science-informed decision making.
- Communicating relevance and providing access to research.
- Promoting resource stewardship through partnerships.

*In two recent blue ribbon reports (Pew and the U.S. Ocean Commission), loss of fish stocks, invasions of non-native species, and pollution were cited as the three leading management challenges for our nation's oceans. Superimposed upon these immediate threats are the poorly defined, but imminent effects of long-term changes in global climate and rising sea level." - Susan Williams, Director, Bodega Marine Lab*

*The Pacific Coast Science and Learning Center supports research, management and outreach on fisheries, invasive species, pollution, and global climate change to help the National Park Service address these threats.*



## PCSLC RESEARCHERS ADDRESS ENVIRONMENTAL CHALLENGES

- **MARINE PROTECTED AREA DESIGN** - PCSLC researchers have modeled fishery response to MPAs, mapped critical habitat for fisheries and co-convene a stakeholder working group to inform MPA designation off the Marin Coast.

- **TOMALES BAY BIODIVERSITY INVENTORY** - PCSLC leads this multi-partner and multi-stakeholder program that provides habitat and species data for conservation planning. See: [www.tomalesbaylife.org](http://www.tomalesbaylife.org).

- **BASELINE NATURAL RESOURCE INVENTORIES AND LONG-TERM MONITORING** - Projects on seafloor habitat mapping for marine protected area designation, an intertidal fish inventory, a coastal biophysical inventory, intertidal community monitoring, and the Tomales Bay Biodiversity Inventory.

- **SHIPWRECK DAMAGE ASSESSMENT** - PCSLC coordinated a Natural Resource Damage Assessment that facilitated over \$100K in reimbursements from the Coast Guard.

## ***PCSLC Programs at a Glance: 2002 - 2007***

BIOQUESTS & INVENTORIES	12
NEW PARK SPECIES RECORDS	503+
NEW SPECIES TO SCIENCE	10
ACRES OF NPS SEAFLOOR MAPPED	7,400
INCREASE IN RESEARCH PERMITS	113%
NON-FEDERAL FUNDS RAISED FOR RESEARCH, MANAGEMENT, AND EDUCATION	\$963,600
PH.D. LEVEL RESEARCHERS	60+
GRADUATE STUDENT RESEARCHERS	32
UNDERGRADUATE RESEARCHERS	21
STUDENT INTERNSHIPS	48+
NPS STAFF (TOTAL STAFF)	2.5 (3.5)
VOLUNTEER HOURS	3,500+
STUDENTS USING CURRICULUM-BASED EDUCATION	4,500+
<b>PUBLICATIONS</b>	
Peer-reviewed Articles	37+
Theses (MS and PhD)	18
Research Project Summaries	32
PRESENTATIONS TO MANAGEMENT	44+
RESEARCHER NIGHTS HOSTED	2,000+
CESU and COOPERATIVE AGREEMENT PROJECTS	8
INVENTORY & MONITORING PROGRAMS MANAGED	6
NPS TARGETED RESEARCH PROGRAMS FUNDED OR ASSISTED	35+

### **GRANTS AND FUNDING PARTNERS**

*(Nearly 1 million in non-federal grants to PCSLC and partners)*

Mead Foundation, Marin Community Foundation, Cox Family Fund, Crocker Foundation, California Department of Fish and Game, Crocker Family Fund, Pew Ocean Trust, Tomales Bay Watershed Council, Environmental Action Committee of West Marin, State of California, Marin County Fish and Wildlife Committee.

### **PROMOTING RESOURCE STEWARDSHIP THROUGH PARTNERSHIPS**

*The PCSLC physically hosts and provides technical guidance and data support (office and meeting space, IT support, databases, program management) to the major stakeholder group in the region, the Tomales Bay Watershed Council. This group of ~30 local stakeholders works with NPS, other federal and state agencies, and non-profit groups to conserve water quality, habitats, species of concern and promote sustainable management in West Marin County.*

*PCSLC staff provided key map, data, and planning expertise on a team that raised ~\$2.5 million in state and private funds for restoration of 550 acres of coastal wetlands within NPS boundaries. These proposals also won \$800,000 for a water quality monitoring program in the watershed and \$250,000 for monitoring the effects of wetland restoration..*

*In 2006, PCSLC was the lead author and coordinator for a state grant that won \$460,000 for an integrated coastal watershed management plan for Marin County which formalized partnerships between NPS, four water agencies, and the Tomales Bay Watershed Council. Only 4 such grants were awarded in the state from over 30 applicants.*

*The Tomales Bay Marine Station provides research facilities and boat berths for scientists working on critical park research. Over 2000 researcher-nights have been hosted since 2005. By 2011, the facility will include a laboratory and additional researcher facilities. Universities also utilize the site for marine ecology courses.*



### **SERVICES**

The PCSLC provides assistance and leadership to NPS staff, partners, and stakeholders with grant writing, field assistants, logistics, scientific support, data analysis, GIS, database support and design, internships, interpretive materials, project management, research facilities, and computer support.

## **SUPPORTING SCIENCE-INFORMED DECISION MAKING**

Meeting **Facilitation** for: “*The Influence of Chytridiomycosis on Restoration Plans for the Mountain Yellow-legged Frog*” and “*Knowledge, Uncertainties, and Research Needs in Evaluating the Role of Pesticides in Amphibian Declines in California and Globally.*”

Co-convenor of the West Marin **marine protected area (MPA) working group**. This partnership with NOAA, USFWS, and local stakeholders is cooperating to ensure that effective MPAs are established in the region.

Chair of the Tomales Bay Watershed Council’s **Habitat Committee**.

Chief coordinator for the **Tomales Bay Biodiversity Partnership**, which provides data and science services to local stakeholders for watershed management.

## **FACILITATING THE USE OF NATIONAL PARKS FOR SCIENTIFIC INQUIRY**

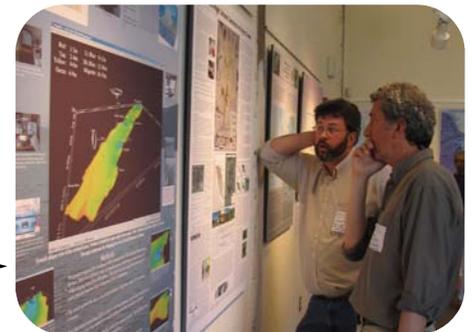
The PCSLC provided logistical, financial, planning, or permitting **support to 100% of researchers at Point Reyes and 66% of researchers at Bay Area National Parks in 2006.**

PCSLC funding, internships and logistical support prompted scientists to implement **staff prioritized research** at PINN, GOGA, and PORE on over 20 projects (*see following page*).

PCSLC has provided over **2,000 researcher nights** to scientists working on resource management questions at PORE.



← *Dozens of university students have participated in bioquests and many have continued on to complete senior theses that provided valuable inventory data to NPS. Many have continued their work in the parks during graduate school.*



*A map conference brought together researchers, agencies and stakeholders to discuss common conservation issues.* →

## **COMMUNICATING RELEVANCE AND PROVIDING ACCESS TO RESEARCH KNOWLEDGE**

**Education to Formal Groups** - Trained high school students in GIS and project management to delineate their watershed. They presented a poster at the National 2006 AGU Meeting to great acclaim and continue to work in science internship positions at the PCSLC.

**Middle school PCSLC curriculum guides**, "Creating Coastal Stewardship through Science" was used by >2000 students.

Convenor of the Tomales Bay Watershed **Signage Group**.

Outreach to **front-line interpreters** across the SFAN network.

The PCSLC **map conference** brought together >200 researchers, artists, and stakeholders to discuss issues related to local stewardship.

## **COLLABORATION ACROSS THE NATURAL RESOURCE CHALLENGE**

**Manages several of the Inventory & Monitoring program’s marine projects** and has raised funds and developed partnerships to expand them.

Lead for NPS involvement in the State of California’s Aquatic Invasive Species Management Plan and we anticipate that this may lead to more cooperation with the **California Exotic Plant Management Team**.

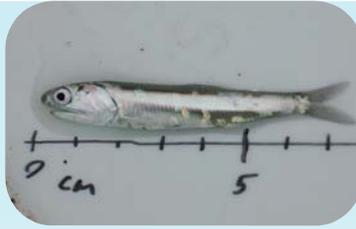
Facilitated the San Francisco Bay Area National Parks **Inventory & Monitoring Program** to develop recommendations for network vital signs priorities over the next decade.

Co-hosted with **I&M** a 2-day **Science Communication Workshop** to provide training, best practices, and models for communicating science by park staff and managers.

**Ongoing collaboration, technical and logistical support** for NPS resource managers in Vegetation, GIS, Wildlife, and Aquatic Ecology throughout the Bay Area Network of Parks. This includes student interns that aid resource managers with priority projects.

Three **California CESU** projects, and co-hosted regional **GIS and GPS training** for NPS resource managers.

## PCSLC SUPPORTED RESEARCH, INVENTORY AND MONITORING PROJECTS



*Projects were selected by NPS network managers for their relevance to park management. The majority of these projects utilized high school interns and include the creation of a research project summary.*

**Examining the incidence, effects and population genetics of *Batrachochytrium dendrobatidis* in and around Pinnacles National Monument,** Paul Johnson, Pinnacles National Monument

**Calming the Controversy: Pigeon Guillemot habitat enhancement, reproductive ecology, and public outreach in relation to cultural resource preservation on Alcatraz Island,** Julie Thayer, UC Davis

**Parasites as high-quality, inexpensive indicators of the diversity and abundance of benthic invertebrates, fishes, and birds in coastal wetlands,** Ryan Hechinger, UC Santa Barbara

**Guiding the restoration of Olympia oysters in PRNS: Measuring limits to population growth and consequences for estuarine biodiversity,** David Kimbro, UC Davis

**Role of interspecific interactions in the population dynamics of co-occurring rare, common and invasive *Cirsium* (Thistle),** Kyra Burraston and Dr. Tiffany Knight, Washington University

**Quantitative Dune Habitat Insect Survey at PRNS**  
Dr. Paul da Silva and Dr. William Lenarz, College of Marin

**Are microbes dispersal limited? Investigating aerial spore dispersal of ectomycorrhizal fungi at PRNS,** Kabir Peay, UC Berkeley

**Postlarval Settlement of Green Crabs in Tomales Bay: Implications for invasive and native species management,** Seth Miller, Bodega Marine lab, UC Davis

**Inducible defenses of the introduced oyster drill (*Urosalpinx cinerea*) in Tomales Bay,** Julia Blum, Bodega Marine lab, UC Davis

**Practical restoration tools to increase native grass establishment in invaded habitats,** Dr. Jeff Corbin, UC Berkeley

**Ecology and community structure of ectomycorrhizal fungi of *Pinus muricata* 10 years after the Vision fire,** Kabir Peay, UC Berkeley

**Identifying evolutionarily significant populations of Banana Slugs (*Ariolimax* spp.) in the San Francisco Bay Area National Parks,** Dr. Janet Leonard and Dr. John Pearse, UC Santa Cruz

**Consequences of functional diversity for the invasion resistance of estuarine fouling communities,** Andrew Chang, UC Davis

**Is a macroalgal bloom threatening eelgrass survival? Response of eelgrass productivity to increased macroalgal dominance in Tomales Bay, CA,** Brittany Huntington, SF State University

**Fish Inventory of Tomales Bay,** Dr. Mike McGowan, Maristics

**Pacific Loon mark-recapture, population ecology, and pollutant loads.** Darwin Long, Cal State Univ, Sacramento

**Sediment Metal Concentrations in the Rodeo Lagoon watershed (GGNRA) and their effects on the surrounding ecosystem,** Dr. David Edwards, Wesleyan College

**Disturbance and mud snails in SF Bay, Tomales Bay, and Drakes Estero: Invasion Facilitation at the Community Level,** Heidi Weiskel, UC Davis

**Peregrine Falcon Population Survey for GGNRA and PRNS,** Brian James Walton, UC Santa Cruz and Predatory Bird Research Group

**West Nile Virus antibody prevalence among native raptors migrating through the Marin Headlands,** Joshua Hull, UC Davis

**Chemical defense in marine algae,** Dr. Carol Thornbur, UC Davis

**Impacts of Macroalgal mats on shorebird foraging in Drakes Estero.** David Press, UC Davis

**Algae Inventory of Tomales Bay.** Chris Kjeldsen, Sonoma State University, Kathleen Dickey, UC Berkeley, Several students

**Invertebrate Bioquest of Tomales Bay,** 6 Principal Investigators.

**Nearshore Fishes Inventory of Tomales Bay,** Jim Pettigrew, SF State

**Native Oyster Distribution in Tomales Bay,** David Kimbro, UC Davis

**Intertidal Benthic Diatom Inventory,** Eileen Hemphill-Haley, Humboldt State University

**Pelagic and epiphytic diatoms of Tomales Bay,** Mary Ann Tiffany, San Diego State Univ and UC Davis

**Bird Inventory of Tomales Bay,** John Kelly and Rich Stallcup, Audubon Canyon Ranch

**Phytoplankton community diversity of Tomales Bay,** Linda Judah, Bodega Marine Lab

**Seafloor Habitat Mapping off PRNS.** Gary Green, Moss Landing Marine Labs

## RESEARCH AND EDUCATION PARTNERS

**The PCSLC has forged strong partnerships with dozens of institutions to fulfill its research, management, and educational mission.**

These include: UC Berkeley, UC Davis, Bodega Marine Lab, SF State Univ., Humboldt State Univ., UC Santa Cruz, Partnership for the Interdisciplinary Study of Coastal Oceans, Sonoma State University, NOAA - National Marine Sanctuaries, Cal. Dept. of Fish & Game, USGS, Washington University, University of Missouri, UC Santa Barbara, Tomales Environmental Learning Center, College of Marin, San Francisco City College, Dominican University, Moss Landing Marine Labs, Audubon-Cypress Grove Preserve, San Diego State Univ, Santa Cruz Predatory Bird Research Group, PRBO Conservation Science, Marine Mammal Center, Wesleyan College, the Point Reyes National Seashore Association, San Francisco Education Fund, Santa Fe College, I-YEL (Inspiring Young Emergent Leaders), Consumnes River College, San Francisco Unified Education District, Marin County School District, Sonoma County School District, Four Private High Schools in Marin County, Two Private High Schools in Sonoma County, Marin County Homeschool Consortium, San Francisco Homeschool Consortium, Clem Miller Env. Education Center, U.S. Fish and Wildlife Service, and Walker Creek Ranch.

## SELECTED SCIENCE COMMUNICATION AND OUTREACH TO THE PUBLIC

**Science Assistant Internships:** recruit, train, and mentor high school and college students wishing to pursue careers in science, conservation, and resource management. All interns receive career counseling and compensation.

**Science Education Internships:** recruit, train, and mentor college students or post-graduate students interested in pursuing science communication as a career. All interns receive valuable training and compensation.

**Residential high school summer science camps:** each summer groups of high school students stay in a dormitory-like setting to provide their services toward intensive science projects occurring throughout the week (ex. fish inventories). Summer 2007 has 2 groups of a dozen high school students scheduled for up to 3 weeks.

**Providing curriculum-based experiences for students:** Over 15 ranger-led programs are offered to middle school and high school student groups. Educators can also choose from 7 middle school guides and high school educators can choose from 5 units from which to base their lesson plans upon.

**"Parks for Science" newsletter:** twice a year, a 6-page publication showcases creative and collaborative science, science education, research, and natural resource management supporting science-informed decision making occurring through the PCSLC and the SFAN I&M program.

**"Research Project Summaries":** a structured, 2-page format provides information to the public on research projects, I&M work throughout the SFAN, resource management activities, and planning initiatives.

**"Critical Resource" newspapers:** each year a theme is approached from the science perspective for all types of audiences. Topics such as Marine Protected Areas, habitat diversity, and gray whale migrations have been highlighted.

**Providing expanded information on research to the public:** each year, all permit-holding researchers information is made available in an abstract format to the public.

**Science behind the Scenery digital slide shows:** each winter, visitors to the PORE Headlands can attend presentations on the monitoring and science of northern elephant seals as well as view a DVD with 9, 5-minute presentations covering other inventory & monitoring topics.

**Provide support to high school and college groups visiting PORE on science-based field trips:** some groups have very specific agendas and need access to specific maps, data sets, inventory equipment, or presentations on a narrow topic. Both the PCSLC Director and Education Coordinator provide these services.



*Conducting an insect biodiversity inventory is one option for high schools students visiting the park*



*Science education intern shares monitoring and science information with visitors.*



*Residential high school science camps offer students the opportunity to learn transferrable science skills*

**SELECTED PCSLC  
AFFILIATED,  
PEER-REVIEWED  
PUBLICATIONS  
2003 - 2007**



- Ballard, G., G. R. Geupel, N. Nur and T. Gardali. 2003. Long-term declines and decadal patterns in population trends of songbirds in western North America, 1979-1999. **Condor** 105:737-755.
- Barr, C. M. 2004. Hybridization and regional sex ratios in *Nemophila menziesii*. **Journal of Evolutionary Biology** 1-9.
- Barr, C. M. 2004. Soil moisture and sex ratio in a plant with nuclear-cytoplasmic sex inheritance. **Proceedings of the Royal Society B: Biological Sciences** 271:1935-1939.
- Becker, B. H., S.H. Newman, S. Inglis, and S.R. Beissinger. 2007. Diet-feather stable isotope ( $^{15}\text{N}$  and  $^{13}\text{C}$ ) fractionation in Common Murres and other seabirds. **Condor** 109: In press.
- Becker, B. H., M.Z. Peery, and S.R. Beissinger. 2007. Ocean climate and prey availability affect the trophic level and reproductive success of the Marbled Murrelet, an endangered seabird. **Marine Ecology Progress Series** 329:267-279.
- Becker, B. H., and S.R. Beissinger. 2006 Centennial Decline in the Trophic Level of an Endangered Seabird after Fisheries Decline. **Conservation Biology** 20: 470-479.
- Becker, B. H., and S.R. Beissinger. 2003. Scale-dependent habitat selection by a nearshore seabird, the Marbled Murrelet, in a highly dynamic upwelling system. **Marine Ecology Progress Series** 256:243-255.
- Bennett, J. P. and C. M. Wetmore. 2005. Lichens of the U.S. National Parks. **The Bryologist** 108:544-553.
- Brusati, Elizabeth D. and Edwin D. Grosholz. 2006. Native and Introduced Ecosystem Engineers Produce Contrasting Effects on Estuarine Infaunal Communities. **Biological Invasions** 8: 683-695.
- Curtis, T. H., J. T. Kelly, K. L. Menard, R. K. Laroche, R. E. Jones and A. P. Klimley. 2006. Observations on the behavior of white sharks scavenging from a whale carcass at Point Reyes, California. **California Fish and Game** 92:113-124.
- Goldstein, T., J. A. Mazet, F. M. Gulland, S. G. Allen, T. Rowles, J. T. Harvey, D. P. King, B. M. Aldridge and J. L. Stott. 2004. The transmission of Phocine herpesvirus-1 in rehabilitating and free-ranging Pacific harbor seals (*Phoca vitulina*) in California. **Veterinary Microbiology** 103:131-141.
- Haney, T. A. and J. W. Martin. 2005. *Nebalia kensleyi*, a new species of leptostracan (Crustacea: Phyllocarida) from Tomales Bay, California. **Proceedings of the Biological Society of Washington** 118:3-20.
- Holden, C. 2006. Overfishing Bad for Birds. **Science**: 311:447
- Hull, J., A. Hull, W. Reisen, Y. Fang, H. Ernest. 2006. Variation of West Nile Virus Antibody Prevalence in Migrating and Wintering Hawks in Central California. **Condor** 108: 435-439
- Hyrenbach, K.D., C. Keiper, S.G. Allen, D.G. Ainley, and D.J. Anderson. 2005. Use of marine sanctuaries by far-ranging predators: commuting flights to the California current system by breeding Hawaiian albatrosses. **Fisheries Oceanography** 15:1-9.
- Keiper CA, Ainley DG, Allen SG, Harvey JT. 2005. Marine mammal occurrence and ocean climate off central California, 1986 to 1994 and 1997 to 1999. **Marine Ecology Progress Series** 289:285-306
- Kelly, J. P., K. L. Etienne and J. E. Roth. 2005. Factors influencing the nest predatory behaviors of common ravens in heronries. **The Condor** 107:402-415.
- Kelly, J. T. and A. P. Klimley. 2003. The Occurrence of the White Shark, *Carcharodon carcharias*, at the Point Reyes Headlands, California. **California Fish and Game** 89:187-196.
- Kennedy, P. G. and T. D. Bruns. 2005. Priority effects determine the outcome of ectomycorrhizal competition between two *Rhizopogon* species colonizing *Pinus muricata* seedlings. **New Phytologist** 166: 631-638.
- Kimbro, D. L. and E. D. Grosholz. 2006. Disturbance influences oyster community richness and evenness, but not diversity. **Ecology** 87:2378-2388.
- Klimley, A. P., R. L. Kihlslinger and J. T. Kelly. 2005. Directional and non-directional movements of bay rays, *Myliobatis californica*, in Tomales Bay, California. **Environmental Biology of Fishes** 74:79-88.
- Kvitek, R. and C. Bretz. 2005. Shorebird foraging behavior, diet, and abundance vary with harmful algal bloom toxin concentrations in invertebrate prey. **Marine Ecology Progress Series** 293: 303-309.
- Levy, S. Atomic Detectives. 2006. **Nature** 442:504- 506.
- Neale, J. C., F. Gulland, K. R. Schmelzer, J. T. Harvey, E. A. Berg, S. G. Allen, D. J. Greig, E. K. Grigg and R. S. Tjeerdema. 2005. Contaminant Loads and Hematological Correlates in the Harbor Seal (*Phoca vitulina*) of San Francisco Bay, California. **Journal of Toxicology and Environmental Health** 68:617-633.
- Peery, M.Z., B.H. Becker, and S.R. Beissinger. 2007. Age ratios as estimators of productivity: testing assumptions on an endangered seabird, the Marbled Murrelet. **Auk** 124:224-240.
- Peery, M.Z., L.A. Henkel, S.H. Newman, B.H. Becker, J.T. Harvey, C.W. Thompson, and S.R. Beissinger. 2007. Post-breeding ecology of Marbled Murrelets in California: lack of a molt-migration strategy. **Auk** 124: In press.
- Peery, M.Z., S.R. Beissinger, S.H. Newman, B.H. Becker, E. Burkett, and T. Williams. 2004. Inland flight behavior of Marbled Murrelets: implications for population monitoring. **Condor** 106:344-353.
- Peery, M.Z., B.H. Becker, and S.R. Beissinger. 2006 Combining demographic and count-based approaches to identify source-sink dynamics: An example using an endangered seabird. **Ecological Applications** 16:1516-1528.
- Roth, J. E., J. P. Kelly, W. J. Sydeman and M. A. Colwell. 2004. Sex Differences in Space Use of Breeding Common Ravens in Western Marin County, California. **The Condor** 106:529-539.
- Ruhlen, T. D., S. Abbott, L. E. Stenzel and G. W. Page. 2003. Evidence that human disturbance reduces Snowy Plover chick survival. **Journal of Field Ornithology** 74:300-304.
- Samuels, I. A., T. Gardali, D. L. Humple and G. R. Geupel. 2005. Winter Fidelity and Body Condition of Three Riparian Songbird Species Following a Fire. **Western North American Naturalist** 65:45-52.
- Schwarzbach, S. E., M. Stephenson, T. Ruhlen, S. Abbott, G. W. Page and D. Adams. 2005. Elevated mercury concentrations in failed eggs of Snowy Plovers at Point Reyes National Seashore. **Marine Pollution Bulletin** 50:1444-1447.
- Stankowich, T. and R.G. Coss. 2006. Effects of predator behavior and proximity on risk assessment by Columbian black-tailed deer. **Behavioral Ecology** 17:246-254.
- Traut, B. H. 2005. The role of coastal ecotones: a case study of the salt marsh/upland transition zone in California. **Journal of Ecology** 93:279-290.
- White, J. D. and T. Gardali. 2004. Low incidence of cowbird parasitism on swainson's thrushes in central coastal California. **Western Birds** 35:156-167.
- White, J. D., T. Gardali, F. R. Thompson III and J. Faaborg. 2005. Resource selection by juvenile swainson's thrushes during the postfledging period. **The Condor** 107:388-401.

# SELECTED PRESENTATIONS TO PARK MANAGEMENT AND THE PUBLIC



## 2003 - 2004

**Impacts of Ocean Noise Pollution on Marine Wildlife**, Michael Stocker, Seaflow

**Identifying Priority Marine Conservation Areas and addressing the ecological impacts of fishing**, Dr. Lance Morgan, Marine Conservation Biology Institute

**Wetland Plant Biodiversity and Productivity**, Dr. Bibit Traut, UC Berkeley

**Preparing for West Nile Virus and Hanta Virus**, Bruce Badzik, Golden Gate NRA

**Marine Invertebrate Dispersal Patterns at Point Reyes**, Leah Akins, Bodega Marine Lab

**Invasive Coastal Grasses**, Dr. Jeff Corbin, UC Berkeley

**Biodiversity in Taiwan**, Dr. Gary Fellers, USGS

**Chemical Defenses in Marine Algae**, Dr. Carol Thornber, Bodega Marine Lab/UC Davis

**Barring Non-Native Plants from California NPS Units**: Drs. Vania Coelho, Mietek Kolipinski and Sibdas Ghosh, Dominican Univ.

**The 1906 trace of the San Andreas Fault**, Dr. Tina Niemi, Hongwei Zhang, and Chris Dunn, University of Missouri - Kansas City

**Experimental Introductions of the Endangered Grass *Sonoma alopecurus* at Point Reyes**, Sasha Gennet, UC Berkeley

**Predator Recognition and Anti-predator Behavior of Columbian Black-tailed Deer**, Ted Stankowich, University of California, Davis

***Ammophila arenaria* (European beachgrass) from native sand dunes at Point Reyes NS**, Ben Peterson, Point Reyes NS

**Functional Wetland Mapping**, Chelsea Donovan, PRNS

**Bird Conservation Across the Americas**, Guido Berguido, PRBO

**Invasive plant removal on firebreaks**, Janet Klien, Marin Municipal Water District

## 2005

**Invasive Cordgrass Ecology and Control**, Dr. Elizabeth Brusati, UC Davis and Cal-IPC

**Red-legged frog ecology and the effects of pesticides on frogs**, Dr. Gary Fellers, USGS

**Tsunami in California**, Don Hoirup, California Geological Survey

**A Removal Study of the Invasive European Green Crab in Tomales Bay**, Jim Pettigrew, San Francisco State University

**Coastal Biophysical Inventory at Point Reyes National Seashore and Golden Gate National Recreation Area**, Dr. Rhea Muchow, UC Davis

**Nearshore Seafloor Habitat Mapping at the Point Reyes Headlands and Drakes Bay**, Dr. Gary Greene, Moss Landing Marine Labs

**Soundscape characterization and management planning in the San Francisco Bay Area Network of Parks**, Dave Schirokauer, PRNS

**The effects of deer herbivory and pollinator limitation on the viability of *Trillium grandiflorum***, Dr. Tiffany Knight, Washington Univ.

**Swath-bathymetry Mapping: a New Look at Tomales Bay**, Dr. Roberto Anima and Dr. John Chin, USGS

**Narrated Slideshow of the Galapagos**, Sandy Curth, West Marin School

**African Wildlife - a visit to Kruger National Park**, Dr. Gary Fellers, US Geological Survey

**Physiology and genetics of Sacramento perch: implications for conserving a native Delta fish**, Rachel Schwartz and Christa Woodley, UC Davis

## 2006

**Vegetation and Fire History of Point Reyes during the Last 15,000 Years**, Dr. Scott Anderson, Northern Arizona University

**Little Blue Penguins at Phillip Island Nature Park in Australia**, Heather Jensen, Point Reyes National Seashore

**How Science Enhances the Management of Marine Sanctuaries: Examples from the Past and Prospects for the Future**, Dr. Michael McGowan, Maristics

**Two decades of change in a coastal scrub community: songbird responses to plant succession and the role of disturbance**, Thomas Gardali, PRBO Conservation Science

**Panama Audubon Society**, Darien Montanez, PRBO Conservation Science's 2006 Park Flight Intern from Panama

**Field-Testing an Invasive Plant Species Early Detection Protocol in the SF Area Network of National Parks**, Andrea Williams, NPS

**Highlights of the 2006 fire season at Point Reyes NS and Golden Gate NRA**, Alison Forrestel and Jennifer Chapman, Point Reyes NS

## 2007

**Changing salinity determines patterns of estuarine community diversity**, Andrew Chang, Bodega Marine Lab

**Endophytic Fungi: An introduction and medicinal applications** - Denise Gregory, SF State University

**A Hiker's Guide to Sudden Oak Death** - David Rust, Bay Area Mycological Society

**Evaluating macroalgal impacts and patterns of nutrient supply on eelgrass survival**, Brittany Huntington, SF State University

**Dirt-y little secret: soil fauna as agents of change in California coastal prairie**, Dr. Dan Gruner, Bodega Marine Lab, UC Davis

**The effects of disturbance and non-native species on California oyster communities**, David Kimbro, Bodega Marine Lab, UC Davis

**White Shark Ecology at Point Reyes**, Taylor Chapple, UC Davis

**Fossil Whale Baleen at Point Reyes National Seashore**, Nick Pyenson, UC Berkeley

**A species area relationship for ectomycorrhizal fungi: Does size really matter?** Kabir Peay, UC Berkeley

## ONGOING AND FUTURE PLANS FOR THE PCSLC: 2007 - 2011

Expand Tomales Bay Marine Station to include lab space, additional researcher facilities, and boat berths.

2008 science and education conference for Tomales Bay, PRNS, GGNRA, and PINN.

Expand subtidal habitat mapping and monitoring efforts at PORE and GOGA for help in implementation of Marine Protected Areas.

Continue coordination of local stakeholders in Marine Protected Area process.

Increase scientific, statistical, and technical (GIS/Database) support for NPS science and conservation partners.

Monthly Seminars on park science.

Aid NPS Inventory & Monitoring program with marine monitoring and inventories.

Continue fundraising support for projects important for local stakeholders and NPS.

Outreach to local universities to promote partnerships with NPS.

Manage Research Permit and Reporting System for PRNS.

Participate in more multi-RLC projects.

Complete Tomales Bay Biodiversity Partnership curriculum.

Increase citizen science inventories managed by scientists.

Continue placement of student interns in competitive science and science education positions; offer and expand comprehensive curriculum-based field visits, provide career mentoring, and organize intensive residential science-based programs.

Continue extensive publications related to science at the PCSLC and in the SFAN including: "Parks for Science" newsletter, critical resource newspapers, Research Project Summaries, and Resource Bulletins.

Renovate PCSLC website in its entirety to represent the SFAN, including capabilities for technology-based educational outreach such as live-streaming researchers into classrooms and electronic research field trips.

Collaboratively build a Science Communication Strategy which will articulate commitments to science communication at each of the eight parks within the SFAN and their relation to the PCSLC.

Provide and leverage PCSLC services to SFAN of NPS in the realm of science education.



*Macrocystis kelp from Tomales Bay algae inventory.*



*Low tide on Tomales Bay*

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