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### Carrying out public policy

Nonpoint-source (NPS) pollution — the waste that flows from myriad human activities rather than a single, identifiable source — has become a matter of increasing concern among legislators and environmental agencies. In 1990, the federal Coastal Zone Act Reauthorization Amendments became law and with them a mandate to manage coastal nonpoint-source pollution. NPS pollution includes grease and oil washed off city streets into storm drains, as well as sediment from erosion, heavy metals from marinas and fertilizers and pesticides from farms. According to the U.S. Environmental Protection Agency, agriculture is the leading contributor to this type of pollution.

Leigh T. Johnson, marine advisor in San Diego County, serves an area where extensive urbanization looms over 23 coastal wetland areas and coexists with a \$1 billion agricultural economy. In 1991, she and Valerie J. Mellano, environmental issues advisor for San Diego County Cooperative Extension, obtained a USDA grant to help agricultural producers, environmental groups and government agencies reduce agricultural impacts on coastal water quality.

"We explained to the farmers that they had an opportunity to 'get a seat at the table' by being part of the process," Johnson recalls. "That was new to them. They liked that."

The advisors interviewed people representing the three groups to identify issues, concerns and needs for technical information. At two public forums, the representatives began exploring possible solutions. Some were surprised to learn that the area's farmers were already using "best management practices," such as drip irrigation to reduce runoff and contamination from fertilizers and pesticides.

The process resulted in specific recommendations to address coastal water quality problems. The effectiveness of the project prompted Farm Bureaus in three neighboring counties to form a joint NPS pollution management committee. Johnson's office also recently produced *San Diego County Wetlands*, which includes recommended practices to help growers minimize NPS pollution from their farms. Mellano used it in her follow-up education program on agricultural best management practices.

Johnson's work with groups having conflicting viewpoints follows the tradition of marine

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## Diverse groups team up to fight pollution

Leigh Taylor Johnson

Legislation aimed at water pollution abatement may create strange, and sometimes seemingly incompatible, bedfellows. But in at least one instance, legislation on nonpoint-source pollution provided an opportunity for government, environmentalists and members of the agricultural and recreational boating industries to make a clean start at overcoming what had previously been mutually frustrating attempts at communication.

The legislation in question was the Nonpoint Source Pollution Program, passed by Congress as an amendment to the Coastal Zone Act in 1990. Two novel aspects of the program were that it required public involvement in developing and implementing pollution "management measures" and that the management measures be economically achievable.

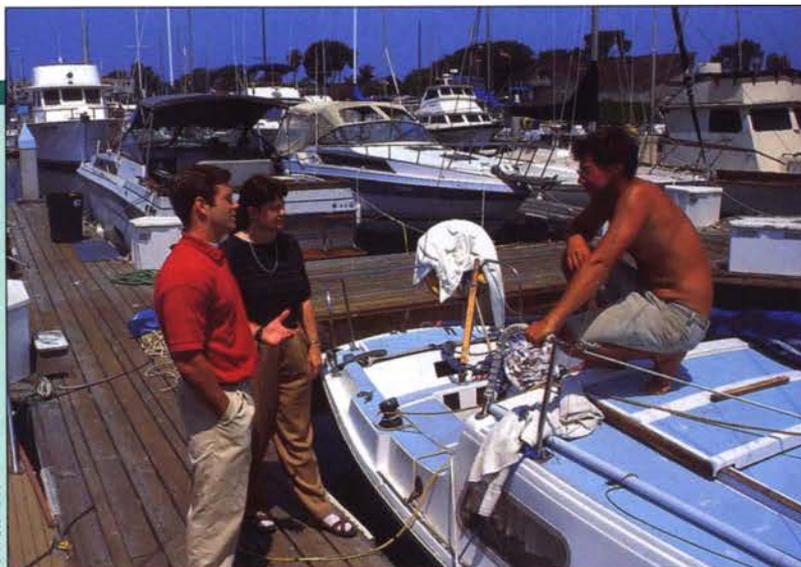
In response to this legislation, the San Diego County Cooperative Extension initiated a joint public-issues program focused on the effects of agriculture on coastal nonpoint-source pollution. We worked with agricultural producers, government agencies and environmentalists to educate the groups to one another's perspectives. The project proved so successful that we decided to use it as a model for working with the recreational boating industry.

Although the largest source of pollutants in marinas is upland runoff from storm drains, the kinds of pollutants generated by recreational boaters are diverse and tough to handle. Pollutants include not only the obvious offenders — sewage, garbage, trash, oil and fuel — but also heavy metals from antifouling paints, zinc anodes, sanding dust, paint, varnish, cleaners and other materials used in boat maintenance.

Marina managers, government agencies and environmental groups expressed interest in working together in addressing the require-

*"We explained to the farmers that they had an opportunity to 'get a seat at the table' by being part of the process . . . They liked that."*

San Diego-based marine advisor Leigh Taylor Johnson and student intern Sam Herrick talk to a recreational boat owner about best management practices to prevent pollution from marinas.



John Stumbo

ments of the Nonpoint Source Pollution Program. So, with funding from the U.S. Environmental Protection Agency and the California Sea Grant Extension Program, we designed a 3-year research and education program. Although the focus was on San Diego County, results and materials were disseminated throughout California and other coastal states as well.

During the research phase of the project, we interviewed 128 representatives of marinas, boat repair yards and maintenance services and boat owners, as well as representatives of government and environmental groups and scientists. We wanted to know what these individuals knew about nonpoint-source pollution, what their concerns were and how they thought various problems should be solved.

Then, the interview results reflecting each group's point of view were shared with the others. We next convened a meeting at which representatives of the groups developed recommendations for reducing pollution. One of their main recommendations was for voluntary efforts by industry, supported by educational assistance. Because they had exchanged concerns, discovered much commonality in opinions and worked as a team to suggest solutions, tensions were greatly reduced and willingness to work together greatly increased.

To address educational needs, we developed a number of resources, including a comprehensive planning manual for marina managers, brochures for boat owners and others on vessel maintenance and impacts of pollution and an annotated bibliography. They were based on more than 100 references (including the federal nonpoint-source pollution guidance document), interviews with industry leaders in pollution control and reviews by in-

dustry, environmental representatives and scientists in government agencies. In conjunction with several other California Sea Grant advisors and numerous cooperating organizations, we conducted seminars for 100 coastal and inland marina managers in five areas of California. We also conducted seminars for boat owners in San Diego and Mission Bays.

We used questionnaires to document that the marina managers found meetings and materials to be very useful (mean of 4.5 on a scale of 5). But we also wanted to determine whether behaviors had been changed, so we also asked the marina managers which of 28 Best Management Practices (BMPs) they had been using before our program, and whether they had implemented any new ones as a result of it.

The BMPs on the survey were selected from our educational materials, that were used as a basis for the seminars. Examples of BMPs include: Do you keep oil- and fuel-spill containment booms handy? Do you advertise hazardous waste collection stations and events? Do you require boat maintenance contractors working in your marina to have a license and insurance? Do you provide boaters with guidelines for topside work? Do you have a pollution prevention plan and use it to train your staff? Results showed a dramatic increase in the percentage of marinas using each BMP after the program — with as many as 74 to 92% of the marinas adopting some practices. Statistical analysis found that almost all of the increases in percentage of marinas using each BMP were significant at the .001 level. The few that were not significant at the .001 level were significant at the .05 level.

Impacts of this project are spreading: Since it ended, requests for materials and

recommendations on working with the boating industry have come from as far away as Florida, New York and Guam. Monitoring marinas for pollution control and water quality improvements is beyond the scope of this project and the jurisdiction of the Sea Grant Extension Program. However, it is clear that the project played a vital part in providing educational resources and helping to stimulate awareness and adoption of best management practices for pollution prevention.

With special assistance from the Division of Agriculture and Natural Resources, we are now looking at some economic aspects of boating pollution. We hope to learn what information recreational boaters and the boating industry need to help them choose practices and products that are both economical and effective for reducing pollution.

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*Dr. Valerie Mellano, UCCE Environmental Issues Advisor, was coleader of the agricultural program. Erika McCoy and Clay Clifton, UCCE Program Representatives, assisted in the recreational boating program.*

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advisor emeritus John Richards, who in the 1980s successfully mediated between the offshore oil industry and commercial trawl fishers. Johnson has also helped resolve conflict between the local sea urchin fishery and a kelp processor and worked with marinas to reduce pollution from recreational boating (see page 24).

### Charting the future

The Sea Grant Extension Program charts its course to reflect broad input from those in marine-dependent industries, resource-related agencies and academia. Panels representing both the aquaculture and seafood industries, for instance, advise Sea Grant on their research and extension needs.

The Resources Agency Sea Grant Advisory Panel, consisting of representatives of the numerous state agencies that manage the affairs of California's 1,100-mile coast, also provides recommendations for Sea Grant on research and education needs.

Within the university, the advisors and specialists meet three or four times a year to discuss ideas, plan collaboratively and update each other on their progress. Program priorities are reviewed annually to address national, regional and state priorities. The national goals currently guiding Sea Grant's vision emphasize economic leadership, coastal ecosystem health, public safety, education and human resources. How these goals translate into specific programs in the years ahead is difficult to predict.

Indications as to how these goals translate into specific programs were brought into focus at a recent major conference on California and the "world ocean." The conference — the largest in 30 years — identified a wide variety of high-priority issues affecting ocean and coastal management, including many that Sea Grant Extension Program personnel are currently working on — marine protected areas, innovative fisheries management strategies, water quality education, mariculture technical assistance and coastal economic development.

"While the specific challenges may be different, the need for similar processes to resolve them is not," Dewees says. "The challenges of coastal and ocean management can only be achieved through communication, collaboration, community involvement, scientific investigation and effective implementation. The Sea Grant Extension Program will continue to be a critical link in carrying out these processes to address the urgent needs of California's marine environment."

— John Stumbos