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Brown-Nichols Science Award Committee
Delta Science Program
650 Capitol Mall, 5th Floor
Sacramento, CA 95814

To the Committee:

I am writing in support of the nomination of Jim Cloern for the 2012 Brown-Nichols Science Award. I have been collaborating professionally with Dr. Cloern since the early 1990s, and I feel qualified to comment on his contributions as an estuarine scientist working in the San Francisco Estuary and elsewhere, as a research team leader, as a mentor of young scientists, as a facilitator of collaborative research and as a leader in local environmental policy. I recommend him very strongly for this award, not only because of his contributions to our scientific understanding of the Bay-Delta, but also because of his successful efforts to translate that understanding into global lessons in science and management applicable at other estuaries.

Jim Cloern is an exceptional scientist and scholar. He has made outstanding contributions to our fundamental understanding of the way estuaries work. He was one of the pioneers in applying mathematical modeling techniques to describing and understanding estuarine phytoplankton growth and ecology in the 1970s. In the early 1980s, he was a leader in delineating the importance of benthic grazing in determining estuarine productivity and structuring their food webs. The *Corbula amurensis* invasion of 1986 was the seminal event so far in the estuary's monitoring record, and Dr. Cloern and his colleagues did a masterful job of recording it, interpreting it and supplementing the field evidence with definitive laboratory experiments and modeling studies. Jim was also early to understand and write about the regulatory forces of river discharge, density stratification and especially turbidity on estuarine phytoplankton. His combined research on turbidity, benthic consumers, river discharge, stratification, and other factors has been a major force shifting the way estuarine scientists view system productivity, placing the nutrient-control paradigm into a rich context that contains many other factors as well. Jim has made many other important contributions to our understanding of bloom dynamics in estuaries, ranging from focused

studies of red tides in San Francisco Bay to a classic review of coastal phytoplankton blooms in *Reviews of Geophysics*. His plankton modeling work with Dr. Lisa Lucas and other colleagues over the last 15 years has been at the forefront of similar efforts around the world, combining the very best of ecological understanding and contemporary modeling tools. Another notable research contribution of the last decade is Dr. Cloern's work on estuarine organic matter sources and the central importance of phytoplankton for the metazoan food web. His related study of the stable isotope composition of estuarine plants was a wonderful accomplishment in empirical science. Jim continues to make other important conceptual contributions to ecology. His more recent publications on habitat connectivity, phytoplankton community ecology, ocean-estuary coupling, and patterns of chlorophyll variability in coastal systems throughout the world are original and becoming highly influential. The range of research contributions over his career is unusual and impressive. Throughout, his work has been punctuated by the publication of important reviews and the editing of focused journal issues and books such as the 2006 Limnology and Oceanography special issue on eutrophication. A major, invited paper on long-term change in San Francisco Bay is currently under review for publication in *Reviews of Geophysics*. His publishing record has been exceptionally productive and innovative, of great benefit to estuarine science in general and to understanding the San Francisco Estuary in particular.

One of Dr. Cloern's great contributions—and an important source of his knowledge and inspiration—is the long-term water quality monitoring study in San Francisco Bay that he has maintained doggedly for decades. This has resulted in a uniquely long record that provides unusual insight into estuarine time scales of variability and provides a valuable and irreplaceable context for observing effects of climate change. The web site is one of the best examples I know of an outreach project that is timely and of use to both the public, managers and scientists. I don't think most people can appreciate the personal effort and commitment that has gone into maintaining this program, which is not mandated and has to be fought for year after year. It's an effort that continues to this very day as Jim seeks to provide continuity of monitoring data for the next generation of estuarine scientists and managers.

In addition to leading the monitoring project, he has been the prime mover and guide for several outstanding scientific initiatives in the San Francisco Estuary, most recently the ambitious CASCaDE (Computational Assessments of Scenarios of Change for the Delta Ecosystem) Project, including

the recent influential paper from this group published in PLoS ONE. The long-term database and these other local efforts are not only important for the San Francisco Estuary but have implications for basic estuarine science and coastal habitats globally because of the questions asked by Jim and because of the tools he and his colleagues develop along the way.

Dr. Cloern is one of the most well-respected figures in estuarine science today, with a truly global reputation and colleagues who appreciate him around the world. This is evident in the variety and number of invited talks, workshops, technical advisory panels, program and grant review panels, and journal reviews. In the case of the San Francisco Estuary, relatively recent efforts include the Environmental Monitoring Program 5-year review, the San Joaquin River water quality study and the South Bay salt ponds restoration work. Further afield, he has recently participated in an NCEAS working group on coastal oceanography and a program review committee for the Stazione Zoologica in Naples, as well as helping to form a SCOR working group on coastal phytoplankton. These efforts point to both his stature and his willingness to shoulder major professional responsibilities. I have been on some of these where he was colleague or leader and he was outstanding in both roles: energetic, to-the-point and challenging. He has also been an active associate editor for several significant journals in the field and has helped to organize a number of professional conferences. Jim is nearing the end of his term as editor-in-chief of Estuaries and Coasts, one of the major journals in aquatic ecology. The journal has experienced a large improvement in reputation and efficiency under his influence. Dr. Cloern also organized and led the American Geophysical Union Chapman Conference in Rovinj, Croatia (8–12 October 2007) on long-term phytoplankton records in estuaries, which was attended by over 90 scientists from 29 countries. The conference was unusually successful, many participants saying it was the most useful one they had ever attended, and it has led to what appears to be a long-term international collaboration; the SCOR working group mentioned above is one example. Its success is a testament to Dr. Cloern's scientific stature, as well as organizational, communication and mentoring skills. His ability to be effective in so many roles is remarkable.

Dr. Cloern has a strong background in collaborating with and mentoring young scientists and students. He has also hosted a number of foreign postdoctoral and visiting scientists from France, Italy, China and elsewhere. He has a knack for recognizing talent and giving it the environment to grow in. I am always struck by the respect and gratitude these young colleagues

and students feel for him, partly a measure of his own scientific abilities but also a reflection of personal qualities. Dr. Cloern's own experience of foreign scientific culture is quite deep, with two long sojourns in Marseilles and Brest doing coastal research.

Jim is one of the very admirable people that I know. He has high standards of integrity in both his professional and personal life. He is generous and accommodating. I can think of few scientists in this field who surpasses Jim's combination of scientific depth, contributions to the professional community, personal and professional integrity, and genuine abiding interest in estuarine science and its progress. The breadth and depth of his accomplishments in estuarine science was recognized in 2010 when he received the prestigious B.H. Ketchum Award from Woods Hole Oceanographic Institution. The criteria for this award (`http://www.whoi.edu/page.do?pid=7615`) are similar to those of the Brown-Nichols Award and yet further evidence of his suitability for the latter. Thank you for considering Jim Cloern for the Brown-Nichols Award.

Sincerely yours,

Alan Jassby

Digitally signed by Alan Jassby
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Research Ecologist Emeritus