

Final Evaluation Findings

Elkhorn Slough National Estuarine Research Reserve

June 2000 – March 2005



March 2006

Office of Ocean and Coastal Resource Management
National Ocean Service
National Oceanic and Atmospheric Administration



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I. EXECUTIVE SUMMARY

A. OVERVIEW

The Coastal Zone Management Act (CZMA) of 1972, as amended, established the National Estuarine Research Reserve System (NERRS). Sections 312 and 315 of the CZMA require the National Oceanic and Atmospheric Administration (NOAA) to conduct periodic performance reviews or evaluations of all federally approved National Estuarine Research Reserves (NERRs). The review described in this document examined the operation and management of the Elkhorn Slough National Estuarine Research Reserve (ESNERR) during the period of June 2000 through March 2005. The Elkhorn Slough National Estuarine Research Reserve is administered by the California Department of Fish and Game (CDFG) Lands and Facilities Branch.

This document describes the evaluation findings of the Director of NOAA's Office of Ocean and Coastal Resource Management (OCRM) with respect to ESNERR during the review period. The recommendations made by this evaluation appear in **bold** and follow the relevant section of findings. Two types of recommendations are possible: (1) Necessary Actions address programmatic requirements and *must* be implemented by the indicated date; and (2) Program Suggestions describe actions that NOAA believes CDFG should take to improve the program but that are not currently mandatory.

The fundamental conclusion of these findings is that CDFG is implementing and enforcing the federally approved Elkhorn Slough NERR. However, Necessary Action #4 requires that ESNERR submit a revised management plan by September 30, 2006. If the Reserve fails to do so, NOAA will immediately initiate a problem-specific evaluation to address the issue. Upon completion of this focused evaluation, the State of California's operation and management of ESNERR may be found to be deficient and the State of California may be found to be not adhering to the requirements of NERRS regulations as adopted by the Secretary of Commerce under the CZMA. Program Suggestions that are reiterated in consecutive evaluations due to continuing problems may be elevated to Necessary Actions. If no dates are indicated, CDFG is expected to address the recommendations by the time of the next §312 evaluation, which will occur approximately three to five years following the release of these final evaluation findings. This document contains four Program Suggestions and two Necessary Actions. NOAA will consider the findings made by this evaluation when making future financial award decisions regarding ESNERR.

B. SUMMARY OF ACCOMPLISHMENTS

The evaluation team documented a number of ESNERR accomplishments during the review period. These include:

Issue Area	Accomplishment
Tidal Wetland Plan	ESNERR has demonstrated great leadership in the development of the Elkhorn Slough Tidal Wetland Plan.
Land Acquisition	ESNERR works closely with state and local partners to accomplish land acquisition, conservation and management in the Elkhorn Slough watershed.
Research and Monitoring Program	ESNERR's Research Program is an integral part of a strong, adaptive science-to-management continuum. NOAA found that research conducted by and through the Reserve is stimulated by current management needs, and in turn produces information that is widely used by coastal resource managers.
Research Tracking System	ESNERR's electronic research tracking system is innovative and has proved very useful to the scientific community.
Historical Ecology Research	ESNERR's commitment to historical ecology research provides a valuable perspective for future scientific research, habitat restoration and Slough management, and can serve as a model for the NERR System.
Education Program	ESNERR has shown great commitment to providing educational opportunities for underserved populations in the region.
Coastal Training Program	ESNERR has developed and implemented an extremely successful Coastal Training Program. Workshop content is developed using the most current scientific information available, which itself is often a result of Reserve-funded research.
Coastal Training Network	The Coastal Training Network developed by the CTP is highly innovative, and has been well-received and utilized by coastal managers.
Stewardship Program	ESNERR develops and successfully disseminates habitat restoration and management techniques that can be applied on lands throughout the Elkhorn Slough watershed.
Volunteer Program	ESNERR has enhanced the volunteer experience by providing a variety of continuing education opportunities.

C. SUMMARY OF RECOMMENDATIONS

In addition to the accomplishments listed above, the evaluation team identified several areas where the program could be strengthened. Recommendations are in the form of Program Suggestions (PS) or Necessary Actions (NA). Areas for program improvement include:

Issue Area	Recommendation
Staffing	PS 1: The CDFG should work to fill the vacant habitat specialist/maintenance position. NOAA also continues to encourage CDFG to work to secure state funding for the administrative assistant's position.
Elkhorn Slough Foundation	NA 2: ESNERR must update their Memorandum of Understanding with the Elkhorn Slough Foundation to reflect the current conditions of the partnership and to address future needs.
California Coastal Conservancy	PS 3: ESNERR should consider developing an MOU with the California Coastal Conservancy and the Elkhorn Slough Foundation to formalize their joint agreement regarding management of NOAA Coastal Training Program funds.
Management Plan	<p>NA 4: The Management Plan update is subject to a necessary action for the fourth consecutive evaluation. The Reserve must complete, finalize, and submit the revised management plan to NOAA according to the following schedule:</p> <ul style="list-style-type: none"> a) draft: May 31, 2006 b) final: September 30, 2006. <p>If the final deadline is not met, NOAA will immediately initiate a problem-specific evaluation pursuant to 16 U.S.C. §§ 1458 and 1461 and 15 C.F.R. Part 123.133(b)(9), to address the Reserve's failure to complete the Management Plan revision. Upon completion of this focused evaluation, the State of California's operation and management of ESNERR may be found to be deficient and the State of California may be found to be not adhering to the requirements of NERRS' regulations as adopted by the Secretary of Commerce under the CZMA or the terms of its cooperative agreement. If it is so found, the State of California will be subject to sanctions pursuant to 16 U.S.C. §§ 1458(c) and 1461(f), 15 C.F.R. Part 921.33(c), and 15 C.F.R. Parts 923.131-923.135.</p>
Reserve Advisory Committee	PS 5: ESNERR should redefine the purpose, and examine the composition, of the Reserve Advisory Committee to reflect current and future needs of the Reserve.
Grants Management	PS 6: ESNERR should create a grants management team for improved coordination and oversight across the three grant partners, the Elkhorn Slough Foundation, the Department of Fish and Game, and the California Coastal Conservancy. ESNERR and Reserve partners should also strive to be more comprehensive when reporting on programs and projects in their semi-annual performance reports.

II. PROGRAM REVIEW PROCEDURES

A. OVERVIEW

NOAA began its review of ESNERR in January 2005. The §312 evaluation process involves four distinct components:

1. An initial document review and identification of specific issues of particular concern;
2. A site visit to California including interviews and a public meeting;
3. Development of draft evaluation findings; and
4. Preparation of the final evaluation findings, partly based on comments from the state regarding the content and timetables of recommendations specified in the draft document.

B. DOCUMENT REVIEW AND ISSUE DEVELOPMENT

The evaluation team reviewed a wide variety of documents prior to the site visit, including: (1) federally approved Environmental Impact Statement and program documents; (2) financial assistance awards and work products; (3) semi-annual performance reports; (4) official correspondence; (5) previous evaluation findings; and (6) relevant publications on natural resource management issues in California.

Based on this review and on discussions with OCRM's Estuarine Reserves Division, the evaluation team identified the following priority issues:

- Status of ESNERR's management plan revision and compatibility of existing and planned uses;
- Major accomplishments during the review period;
- Status of the reserve's general administration, including grants, fiscal management and staffing;
- Status and visibility of research, education and stewardship programs, including local and system-wide initiatives such as the System-wide Monitoring Program (SWMP) and the Coastal Training Program (CTP);
- The manner in which ESNERR coordinates with other federal, state, and local agencies and programs;
- Status of ESNERR facilities, land acquisition projects and resource management;
- The status and effectiveness of ESNERR staffing and programs, and participation in

national research, monitoring and education programs;

- ESNERR's role at the local level, and its integration with partners; and
- The manner in which ESNERR has addressed the recommendations contained in the §312 evaluation findings released in 2000.

C. SITE VISIT TO CALIFORNIA

Notification of the scheduled evaluation was sent to CDFG, ESNERR, relevant federal environmental agencies, California's congressional delegation and regional newspapers. In addition, a notice of NOAA's "Intent to Evaluate" was published in the *Federal Register* on November 18, 2004.

The site visit to California was conducted on March 21-24, 2005. Ralph Cantral, Evaluation Team Leader, and Kimberly Penn, OCRM National Policy and Evaluation Division; Kate Barba, OCRM Estuarine Reserves Division, John Dandelski, ESNERR Program Specialist, OCRM Estuarine Reserves Division; Michael Wells, Superintendent, California State Parks, and Previous Manager, Tijuana River National Estuarine Research Reserve, formed the evaluation team.

During the site visit, the evaluation team interviewed ESNERR staff, senior CDFG and other state officials, federal agency representatives, coastal researchers, environmental educators, nongovernmental representatives and private citizens. Appendix B lists persons and institutions contacted during this review.

As required by the CZMA, NOAA held an advertised public meeting during the evaluation on March 23, 2005, at 6:30 p.m., at the Elkhorn Slough Visitors' Center, 1700 Elkhorn Road, Watsonville, California. The public meeting gave members of the general public the opportunity to express their opinions about the overall operation and management of ESNERR. Appendix C lists individuals who registered at the meeting.

The exceptional support of ESNERR staff with the site visit's planning and logistics is gratefully acknowledged.

III. RESERVE PROGRAM DESCRIPTION

A. THE NATIONAL ESTUARINE RESEARCH RESERVE SYSTEM

The Coastal Zone Management Act of 1972, as amended, established a system of National Estuarine Research Reserves (NERRS) that are funded cooperatively by NOAA's Office of Ocean and Coastal Resource Management (OCRM) and the host states or territories, who manage the reserves. The NERRS has two primary missions: (1) to establish and maintain, through federal and state cooperation, a national system of reserves representative of various biogeographic regions in the United States; and (2) to conduct long-term research, educational and interpretive activities in support of national coastal zone management priorities.

Toward those missions, reserve sites are selected to represent the range of biogeographic regions, estuarine types and coastal management challenges occurring throughout the Nation. To date, NOAA has designated 26 NERRs that collectively protect more than one million acres of estuarine land and water, and represent 17 of the 29 biogeographic subregions identified by the program. Other sites are under consideration.

B. THE ELKHORN SLOUGH NATIONAL ESTUARINE RESEARCH RESERVE

1. Reserve Site Description

The Elkhorn Slough NERR was designated by NOAA in 1979 as representative of the central California portion of the Californian Province. It is located on the Monterey Bay coast three miles east of Moss Landing and about 100 miles south of San Francisco. Elkhorn Slough is the remnant of an ancient river valley flooded by the last rise of sea level. While there is no permanent river flowing into the slough today, it receives enough runoff in winter to be classified as a seasonal estuary. It is the second largest coastal wetland remaining in California.

The main channel of the Slough extends inland and then northward for a total of seven miles, encompassing a 2500-acre area of marsh and tidal flats. The marshes are dominated by pickleweed (*Salicornia virginica*), a hardy succulent plant. The tidal flats are covered seasonally with extensive algal mats. These mudflats support large numbers of invertebrates including clams, crabs, and worms that are an important part of the food web for birds and fish. For many migrating birds, the Slough is a critical stopping point to rest and feed along the Pacific Flyway. The uplands surrounding the Slough are dominated by grassland, coastal prairie scrub such as maritime chaparral, and live oak and eucalyptus woodlands.

The Reserve's boundary encompasses approximately 1400 acres on the south and east side of Elkhorn Slough. Northwest of the Reserve on the opposite side of the Slough channel is the Moss Landing Wildlife Area (MLWA), more than 700 acres managed by another component of the California Department of Fish and Game. East of the MLWA is an 1100-acre parcel purchased privately for preservation. Northeast of the Reserve in the upper Slough, the Nature Conservancy manages a 700-acre tract of holdings used previously as working ranches. Thus a broader 3900-acre area is being managed for conservation. The Slough channel falls within the

jurisdiction of the Moss Landing Harbor District. This waterway is included also within the boundary of the Monterey Bay National Marine Sanctuary. These and other entities join with CDFG in a unique opportunity to provide integrated management at a land-sea margin.

Wetlands make up 70 percent of the Reserve's land, followed by 20 percent coastal prairie scrub and 10 percent woodlands. The close proximity of these varied habitats supports a remarkable diversity of plant and animal species in a relatively small area. More than 340 species of birds have been recorded within the Reserve, including resident and migratory waterfowl, shore birds, raptors, and songbirds. Of these, the Least Tern, Brown Pelican, and the American Peregrine Falcon receive federal or state protection. Marine fisheries dependent on the Slough at some stage in their life cycle include species such as California halibut, English sole, anchovy, surfperch, and leopard sharks. The Reserve contains a considerable diversity of mammals, reptiles, and amphibians as well.

Current and previous cultures (American, Mexican, Spanish, Ohlone Indian) have alternately used the land for industry (power plant); agriculture (livestock, berry crops such as strawberries, and produce such as artichokes); housing; roads; and a railway. Many non-native species of plants have been introduced over time. In the past more than half of the Slough's tidal wetlands have been diked to create pasturage for livestock. The 1,000-acre Elkhorn Slough Dairy Farm was in operation here from 1915-1972 and the land was leased for cattle grazing until 1982.

The opening of the mouth to the Slough by the U.S. Army Corps of Engineers to create the Moss Landing Harbor in 1946 has led to changes in the ecology of the Slough by introducing marine waters into a formerly brackish wetland system. Although dikes and flood gates were installed in an attempt to mitigate the effect of swift tidal currents, scour and subsequent marsh erosion remain a chronic problem in the Slough. The main channel has been widened to 700 feet with a depth of 35 feet at the mouth and the area experiences a six- to eight-foot tidal range.

The mixture of land uses adjacent to extensive wetlands has made the areas in and around the Reserve ideal for controlled experiments to evaluate the impact of varied management practices for agriculture, wetlands, and flood control on habitat quality, fish and wildlife. Other resource issues being addressed or experienced by the area include: management of non-native species (e.g., if, where, and how to restore native species); salt marsh, tidelands, and upland restoration; and salt water intrusion into ground water being drawn for agriculture.

2. Reserve Administration

The California Department of Fish and Game (CDFG) is responsible for managing the Reserve to meet the goals outlined in the Reserve Management Plan related to resource protection, research, education, interpretation, development, restoration, land acquisition and public uses. This role involves budget development and oversight, management of staff, establishment and enforcement of policies and regulations, and coordination of Reserve activities. The Elkhorn Slough NERR is part of the Lands and Facilities Branch of CDFG, and is administered through CDFG's Central Coast Region Office located in Yountsville.

The Reserve partners with two other organizations to accomplish the program, due in part to institutional limitations within the CDFG: the Elkhorn Slough Foundation and the California Coastal Conservancy. Incorporated in 1982, the Elkhorn Slough Foundation (ESF) is a private, non-profit, member-supported organization dedicated to the wise use and conservation of Elkhorn Slough and its watershed. The Foundation receives a significant portion of the Federal dollars allocated for the Reserve's operations, education, monitoring and research. Many of the Reserve's positions are currently funded via this NOAA grant to ESF. The Foundation also works with local, state, and national constituencies to develop and support research, education, conservation and restoration programs. Although an independent organization, the ESF works closely with the Reserve to develop supplementary funding sources to support Reserve goals. The ESF is housed at the Reserve and the Director and his staff work closely with Reserve staff and volunteers. ESF and the Reserve have recently entered into an agreement with the California Coastal Conservancy (SCC). The SCC receives the NOAA grant for the Coastal Training Program, which is then implemented through the ESF and the Reserve.

The Reserve Advisory Committee (RAC) was established to involve the public and private sector in Reserve policymaking. Representatives include landowners adjacent to and within the Reserve boundaries, academic institutions, governmental agencies, and commercial and environmental interests.

IV. REVIEW FINDINGS, ACCOMPLISHMENTS AND RECOMMENDATIONS

A. OPERATIONS AND MANAGEMENT

Overall, NOAA finds that California's management of Elkhorn Slough National Estuarine Research Reserve (ESNERR) operations is satisfactory. Despite the challenges of a diminishing state budget, the Reserve has greatly expanded and enhanced programming since the previous evaluation. The Reserve's research, education and stewardship programs are well-developed and reflect a clear focus on the state's priority coastal issues. Unfortunately, program goals, objectives and strategies are not formally outlined in a *current* Reserve Management Plan, without which, NOAA is unable to evaluate the Reserve with regard to its program-specific direction and progress. The lack of a current plan is a serious shortcoming, and has resulted in necessary actions in the last three evaluations.

1. Reserve Operations

As described earlier in this document, the California Department of Fish and Game (CDFG) is responsible for managing the Reserve to meet the requirements of the CZMA and the goals outlined in the Reserve Management Plan. This role includes: the establishment and enforcement of policies and regulations, coordination of Reserve activities, budget oversight, and the management of staff. Although CDFG continues to demonstrate a strong commitment to the Reserve, recent budget shortfalls, and their consequences, have compromised the state's ability fulfill some of these responsibilities. Most notably, a hiring freeze has been in effect for all state government positions since October 2001, which has led to a 25% reduction in CDFG's permanent staffing level. Currently only four of the Reserve's employees are state positions, and of those, just two (the Reserve Manager and Volunteer Coordinator) are exclusively state funded. One of the other state positions, the Reserve's administrative assistant, continues to be funded by the NOAA grant. This position is fundamental to Reserve operations and NOAA believes that at this point in the Program's maturity, it should be supported by the state.

A fifth state-funded position, the Reserve's only full-time maintenance position, has been vacant for four years due to the state hiring freeze. This situation has placed undue burden on Reserve staff and volunteers, who have had to dedicate time to building and grounds maintenance in order to keep Reserve facilities functional. The Reserve has recently been given the funding and authority to fill this position, but unfortunately, have not received satisfactory candidates from the job announcement.

Program Suggestion #1: The CDFG should work to fill the vacant habitat specialist/maintenance position. NOAA also continues to encourage CDFG to work to secure state funding for the administrative assistant's position.

Recognizing that CDFG could not provide any additional financial support, and given the personnel constraints imposed, Reserve management determined that the only way to further

develop operations was through their relationship with the Elkhorn Slough Foundation (ESF). During this review period, ESNERR's relationship with the ESF has grown into a collaboration to address both financial and personnel needs. Currently the ESF receives approximately 65% of the Federal dollars allocated to the Reserve's operations, education, monitoring and research. (In 2002, 85% of the total award was passed through ESF.) Thirteen of the Reserve's positions, including the core positions of Research and Coastal Training Program Coordinators, are funded via NOAA monies through ESF. Though not the preferred arrangement for a state-federal partnership such as the NERRS, this relationship has provided a way to overcome current obstacles with a challenging state budget and personnel climate, and has enabled the Reserve to continue to advance programmatically.

The evaluation team noted many accomplishments that are directly attributable to the Reserve's dedicated and creative staff. Staff demonstrate a keen understanding of current issues, and of the opportunities for cooperative management and mitigation of them. They do an excellent job of collaborating with regional partners in research, education and resource management, and of engaging the multitude of community interests. The team also found good coordination between ESNERR and ESF staff. The success of this partnership is, at least in part, due to program-specific objectives which do not overlap, but complement and enhance each program's goals. For example, research conducted by the Reserve on the control of invasive species helps to inform the Foundation's restoration efforts on newly acquired lands.

Since their relationship has developed tremendously in the past decade, NOAA is requiring that ESNERR update their Memorandum of Understanding (MOU) with the ESF to reflect the current reality of their collaboration. The new MOU should be included in the revised Management Plan so that future evaluations can accurately assess the performance of Reserve-specific operations.

Necessary Action #2: ESNERR must update their Memorandum of Understanding with the Elkhorn Slough Foundation to reflect the current conditions of the partnership and to address future needs.

The Reserve and ESF have also recently established a relationship with the California Coastal Conservancy to receive and manage NOAA's grant for the Coastal Training Program (CTP). The CTP is then implemented through ESF and the Reserve. The arrangement is still in its infancy, but seems to be working well. NOAA encourages the Reserve to articulate this agreement with the Coastal Conservancy and ESF via an MOU.

Program Suggestion #3: ESNERR should consider developing an MOU with the California Coastal Conservancy and the Elkhorn Slough Foundation to formalize their joint agreement regarding management of NOAA Coastal Training Program funds.

2. Management Plan

Reserves are required by Federal regulation to have a current NOAA-approved management plan (15 C.F.R. Part 921.13). A reserve's management plan has three primary functions: (1) to provide a framework for the direction of the reserve's programs; (2) to allow a reserve manager to assess how successfully the reserve's goals have been met and to determine any necessary changes in direction; and (3) to guide programmatic evaluations of the reserve. The plan should describe the reserve's goals, objectives and management issues, as well as strategies for research, education and interpretation, public access, construction, acquisition and resource preservation, and, if applicable, restoration and habitat manipulation. Regulations also require that a reserve's plan must be updated every five years.

The Elkhorn Slough NERR Management Plan is dated 1985. It has not been revised since. Accordingly, Necessary Actions in the past three evaluation findings (1992, 1995, 2000) have directed CDFG to produce an updated management plan for the Reserve. The most recent findings required submission of a draft plan by the end of 2001. This deadline was not met, and NOAA has yet to receive a draft.

Certainly, ESNERR has made progress over the past 15 years in program development and implementation. Past evaluation findings documents have described a number of accomplishments in the areas of research, education, land acquisition, and resource management. This document is no exception; Elkhorn Slough NERR is conducting relevant research, producing exceptional education products, and supporting a strong stewardship program. However, without an up to date management plan, NOAA is unable evaluate the Reserve's direction and progress with respect to current program-specific goals and objectives. This is a serious shortcoming. In addition, an up-to-date management plan can help to guide land acquisition and subsequent incorporation into the reserve boundary, as well as facilities construction; all of which are important to ESNERR. Therefore, the development of a revised management plan before the next evaluation is imperative.

During the site visit, the evaluation team and Reserve management reviewed and discussed a new timeline for completing the plan update. A coordinator for the management plan revision process has since been hired and strategic planning meetings are underway. Reserve management has stated that they will be able to meet a deadline of September 30, 2006 for the completion of final management plan.

Necessary Action #4: The Management Plan update is subject to a necessary action for the fourth consecutive evaluation. The Reserve must complete, finalize, and submit the revised management plan to NOAA according to the following schedule:

- a) draft: May 31, 2006**
- b) final: September 30, 2006.**

If the final deadline is not met, NOAA will immediately initiate a problem-specific evaluation pursuant to 16 U.S.C. §§ 1458 and 1461 and 15 C.F.R. Part 123.133(b)(9),

to address the Reserve's failure to complete the Management Plan revision. Upon completion of this focused evaluation, the State of California's operation and management of ESNERR may be found to be deficient, and the State of California may be found to be not adhering to the requirements of NERRS' regulations as adopted by the Secretary of Commerce under the CZMA or the terms of its cooperative agreement. If it is so found, the State of California will be subject to sanctions pursuant to 16 U.S.C. §§ 1458(c) and 1461(f), 15 C.F.R. Part 921.33(c), and 15 C.F.R. Parts 923.131-923.135.

3. Tidal Wetland Plan

Hydrologic alterations have long been recognized as one of the most serious threats facing the Elkhorn Slough. Research conducted by the Reserve and its partners has revealed that human alteration of the Slough's natural hydrology has seriously affected its tidal and sedimentation processes. For example, information gained through Reserve historical ecology research indicates that there has been a dramatic loss of salt marsh over the past 150 years. This is supported by Reserve-collected monitoring data that documents rapid rates of bank erosion due to tidal scour. By providing science-based information such as this to its partners, the Reserve has gained wide respect in the coastal management community.

ESNERR maintains strong relationships with resource management agencies and organizations serving the Elkhorn Slough watershed. Currently, the Reserve and its regional partners are working to develop the Elkhorn Slough Tidal Wetland Plan (TWP). The ultimate goal of the TWP is to conserve, enhance and restore tidal habitats in the Slough watershed. A Strategic Planning Team, composed of scientific experts, local, state and federal coastal managers, and representatives of key conservation organizations, is in the process of identifying tidal habitat goals and strategies that address Elkhorn Slough's hydrological management issues.

The two-year collaborative planning process for the TWP is being funded through a grant from NOAA's Coastal Impact Assistance Program (\$300,000 to the California Department of Fish and Game). The project is jointly managed by the Elkhorn Slough National Estuarine Research Reserve, California Department of Fish and Game, and the Monterey Bay National Marine Sanctuary in collaboration with the University of California at Santa Cruz.

The TWP effort is an excellent example of how ESNERR uses knowledge gained from Reserve research to advance an ecosystem approach to resource management. TWP management goals and strategies have been tailored to the specific ecosystem conditions in the Slough watershed, and can be adapted as new information becomes available. The planning process has been collaborative, with the Strategic Planning Team working to balance a diversity of societal values and management objectives. This attention to stakeholder needs will allow the TWP to be implemented across political and ecosystem boundaries. NOAA commends ESNERR on their leadership in this effort.

Accomplishment: ESNERR has demonstrated great leadership in the development of the Elkhorn Slough Tidal Wetland Plan.

4. Reserve Advisory Committee

A Reserve Advisory Committee (RAC) composed of diverse and dedicated individuals can significantly assist a reserve in furthering its mission and increasing its visibility. ESNERR's RAC represents the varied environmental, economic and societal interests in the Slough watershed with members who are clearly committed to addressing issues facing the Reserve. NOAA finds, however, that while the current RAC functions well as an outreach component of the program, it is not structured optimally to tackle more technical, mission-specific, Reserve matters.

In order to make the RAC more beneficial to Reserve operations and management, ESNERR should carefully consider program needs and align the Committee's role and structure accordingly. The Reserve's management plan revision meetings will provide a good opportunity to discuss strengths and weaknesses of the current Committee, and to develop a vision for the future. By clearly defining the function(s) of the RAC, ESNERR can design the membership in terms of expertise that would be most valuable to the Reserve.

Program Suggestion #5: ESNERR should redefine the purpose, and examine the composition, of the Reserve Advisory Committee to reflect current and future needs of the Reserve.

5. Land Acquisition

Land acquisition in the Elkhorn Slough watershed has been innovative and successful. Although the Reserve boundaries have not been expanded for many years, the total protected land area in the watershed has dramatically increased. The Reserve works closely with ESF, and other state and local partners, to identify properties for purchase or easement and to restore and manage the acquired land. The ESF alone has acquired approximately 2500 acres of land over the past eight years, bringing the total acreage protected by the Foundation to 3600.

A comprehensive land acquisition strategy was developed for the Elkhorn Slough watershed in 2002. The plan is a product of the collaborative efforts of the CDFG and Reserve, and their partners the ESF, the Natural Resources Conservation Service, the Resource Conservation District of Monterey County, the California Coastal Conservancy, and The Nature Conservancy. Potential property acquisitions identified in the plan total 1,175 acres in the southern Elkhorn Slough watershed. The state has prioritized parcels that:

- are adjacent to existing CDFG lands;
- help create an intact and interconnected network of natural communities;
- help complete acquisition of Elkhorn Slough tidal marshlands;
- will improve the water quality of Elkhorn Slough if taken out of current land use;
- protect biodiversity and sensitive species;

- have the greatest potential for restoration and improvement with the least amount of resources; and
- are in imminent jeopardy from development.

Accomplishment: ESNERR works closely with state and local partners to accomplish land acquisition, conservation and management in the Elkhorn Slough watershed.

This land acquisition strategy should be incorporated into the Reserve's revised Management Plan.

6. Facilities

Currently, the research laboratory at ESNERR is a 200 square-foot room located in the Reserve's maintenance building. This space is shared by staff, school groups, graduate research fellows, and visiting researchers. Only ten students can be accommodated at microscopes in the lab at any one time; and often, educational groups are displaced by researchers with time-sensitive experiments. Due to the cramped working area, most laboratory work required by scientists must be conducted off-site at local universities or other research laboratories. This, coupled with the lack of facilities to stay overnight, prohibits some scientists from being able to use ESNERR as a site for their field work. Office space and storage are also limited at the Reserve. Research staff offices are fragmented in different areas of the facilities complex—in a temporary trailer, a storage room, and the administration building. The conflict between office use and storage is exacerbated by the presence of hazardous chemicals and large field equipment.

To address these mounting obstacles, ESNERR requested and received NOAA Construction and Acquisition Funds to design and build a new research and education facility. Construction of this facility will provide the basic laboratory and office space necessary to carry out the Reserve's programs. The new building will also include educational classroom space for a variety of audiences, adequate storage space, and a small studio apartment for visiting researchers.

Throughout this evaluation period, ESNERR worked closely with the State architect, engineers and environmental planners to develop and finalize working drawings for the facility. Monterey County approved the project, and the Reserve procured the required federal, state and county permits. Just prior to NOAA's site visit in March, the state advertised for construction bids. Due to the extreme rise in the price of building materials over the last year, however, the contractor proposals received by the State were all at least \$600,000 over budget. The Reserve submitted a request for additional NERR construction funds to make up the shortfall, and was awarded them. The State will re-bid the project, and construction is expected to begin later this year.

7. Grants Management and Administration

The CZMA Section 312 evaluation process begins with a review of program documents, which include the federally approved management plan, financial assistance awards and work products,

semi-annual performance reports, and previous evaluation findings. This initial research allows the evaluation team to identify issues of particular interest or concern that need to be explored and discussed further.

An item of concern that was immediately evident to the team researching this evaluation was the lack of information provided by some of the ESNERR performance reports. NOAA mandated performance reports are an excellent opportunity to demonstrate the value of projects and programs conducted by ESNERR. These reports not only inform the Estuarine Reserves Division (ERD) about program accomplishments, but also serve to pinpoint areas where NOAA may be able to provide additional assistance to the Reserve. The evaluation team found that ESNERR performance reports were not adequately capturing the activities and accomplishments of all Reserve programs. For example, ERD rarely receives information on the Reserve's K-12 education programs. The education coordinator is considered a core position in the NERRS, and even though the State provides funding for this position at ESNERR, it is used as match for federal funds and therefore information on the program's performance ought to be included in the reports submitted to ERD. The Reserve and its partners should work together to more comprehensively articulate information about program initiatives and how they relate to the Reserve's grant tasks and program goals. Since the evaluation, the quality of performance reporting has improved and NOAA encourages the Reserve to continue making this a priority.

Another issue that came to light during the recent grant processing period (during the preparation of these findings) is related to the dispersed approach through which ESNERR receives NOAA financial assistance awards. The inability of ESNERR partners to complete some administrative actions, including submission of complementary grant applications and requests for financial draw-downs, in a timely manner has become increasingly problematic. Grant management problems such as these necessitate frequent communication with each of the three partners, and have resulted in ERD staff requesting exceptions to NOAA grant requirements. This places undue burden on staff, who must provide significant grants coordination for multiple partners, results in inefficiencies in program support and the potential for miscommunication, and ultimately, reflects badly on the NERRS Program and Reserve Division performance. In order to improve upon the current process, NOAA recommends that ESNERR create a team to coordinate their grants management and ensure individual accountability among the partners. This team should include representatives from the Department of Fish and Game, the Elkhorn Slough Foundation, and the California Coastal Conservancy.

Program Suggestion #6: ESNERR should create a grants management team for improved coordination and oversight across the three grant partners, the Elkhorn Slough Foundation, the Department of Fish and Game, and the California Coastal Conservancy. ESNERR and Reserve partners should also strive to be more comprehensive when reporting on programs and projects in their semi-annual performance reports.

B. RESEARCH AND MONITORING PROGRAM

Overall, the evaluation team found ESNERR's research and monitoring program efforts to be excellent. The Research Coordinator fosters strong relationships with resource management, academic and research communities, and actively seeks opportunities where information gained via Reserve research and monitoring can be applied to coastal management. She has become a nationally-recognized expert in the study of west coast invasive species, and is often called upon to participate in state and national education and training efforts. She regularly publishes the results of Reserve research studies in peer-reviewed scientific journals, as well as magazines for the general public.

1. Reserve Research

NOAA found that ESNERR is conducting essential research that benefits resource management not only on the Reserve and in the Slough ecosystem, but also throughout coastal California. The Research Coordinator (RC) works closely with Reserve staff, the Elkhorn Slough Foundation (ESF), and state and local resource management entities to identify issues affecting coastal ecosystems in the region. The research team then collaborates with the scientific community to conduct applicable research. Information gained through this research is disseminated to the public and management community via the Education and Coastal Training Programs, and applied directly to resource management via the Stewardship Program and ESF.

Applied Research for Adaptive Management

The research team carries out many applied conservation research projects to inform and improve adaptive management in the Elkhorn Slough watershed. A specific example of this is the coordinated research on the habitat value and management of the non-native Australian blue gum eucalyptus, a particularly infamous invasive species in California. The research team identified a lack of information regarding the ecology and management options for eucalyptus, and thus initiated a suite of research projects to address this need. Investigations were conducted by the research team and NERRS Graduate Research Fellows, who examined the ecological value of native oak versus non-native eucalyptus stands by assessing species composition, richness and abundance in each woodland type. Results indicated that there are distinct compositional differences between oak and eucalyptus stands, with oak generally having greater diversity and richness. Nevertheless, eucalyptus groves were found to be used by many native bird species and even provide critical nesting habitat for some, such as Great Blue Herons and Great Egrets. Given these findings, the management of eucalyptus, by thinning or removal, was deemed appropriate predominately for smaller stands in areas that are prime for restoration of higher valued habitat.

The Coastal Training Program disseminated the information gained from these studies in two workshops geared towards both the general public and coastal management communities. An initial workshop was offered on the ecology and ecological impacts of eucalyptus in the Slough watershed; while a follow-up workshop provided information on the social, technical, and

economic considerations of eucalyptus control for ecological restoration. ESNERR staff have employed lessons learned from this research to manage eucalyptus on Reserve lands.

Accomplishment: ESNERR's Research Program is an integral part of a strong adaptive science-to-management continuum. NOAA found that research conducted by and through the Reserve is stimulated by current management needs, and in turn produces information that is widely used by coastal resource managers.

Tracking Reserve Research

Although an extensive review of research conducted by and through ESNERR is beyond the scope of this document, a bibliography of such is maintained by the Research Coordinator. NOAA is very impressed with this research tracking system, a new concept in the NERR system. The library, which is available electronically, has proven very useful to the scientific community and is a model for other Reserves.

Accomplishment: ESNERR's electronic research tracking system is innovative and has proved very useful to the scientific community.

2. Monitoring Programs

ESNERR conducts a suite of monitoring efforts in Elkhorn Slough and its tributaries. Variables range from abiotic water quality parameters, mandated by the NERR System-Wide Monitoring Program, to biological monitoring of indicator species specific to the Slough watershed. NOAA commends ESNERR for developing strong and wide-ranging monitoring programs. Monitoring this breadth of variables is integral to resource management and research programs in and around Elkhorn Slough, as well as to the NERR system as a whole.

The goal of the NERR System-wide Monitoring Program (SWMP) is to identify and track short-term variability and long-term changes in estuarine water quality, habitat and land use in each reserve. The data gathered through SWMP provides standardized information about how estuaries function and change over time, enabling scientists to predict how these systems will respond to anthropogenic changes.

ESNERR is fully compliant with NERRS SWMP requirements. Reserve staff monitor four water quality stations and a weather station, and conduct monthly nutrient analysis. The meteorological data and that from one water quality station are available real-time via Marisys telemetry. The Reserve's SWMP efforts are part of an extensive regional program that includes monitoring supported by Monterey Bay Aquarium Research Institute (MBARI) and Monterey County. For example, monthly water quality and nutrient surveys are conducted at 24 stations throughout the estuary in partnership with ESF and the Monterey County Water Resources Agency. This data collection has been carried out by a single volunteer consistently for 15 years, and is the longest running and spatially broadest monitoring program in the region. Parameters monitored via this program provide a valuable long-term database of estuarine water quality variability, and have already revealed areas in the Slough with severe nutrient pollution issues.

ESNERR also conducts a variety of biological monitoring programs. With strong volunteer support, Reserve staff monitor an array of indicator species and taxa ranging from mudflat macroinvertebrate and vegetative communities to migratory shorebirds and threatened amphibians. One of the Reserve's biomonitoring projects is a pilot study originally funded by NOAA and conducted in collaboration with the National Marine Sanctuary and the Smithsonian Institution to monitor invertebrate communities on settlement plates. Data collected in Elkhorn Slough will be compared with other reserves and sanctuaries on the west coast. Through this pilot, Reserve staff have documented an increase in the invasive European green crab and a subsequent decrease in the number of native mud crabs. NOAA commends ESNERR for their participation in this important study.

3. Geographical and Historical Ecology

The Research Program also conducts a variety of projects in geographical and historical ecology, both in support of Reserve programs and partners, and for innovative investigations of their own. Using Geographic Information Systems (GIS) and remote sensing technology, the GIS specialist and research team are able to recreate historic watershed maps, generate current ones, and perform sophisticated habitat change analyses. ESNERR is thus able to monitor ecological processes, such as bank erosion and marsh elevation change, that occur over longer time periods.

The evaluation team was particularly impressed with the Reserve's work to document the ecological history of the Slough watershed. During this review period, ESNERR's GIS specialist located a wealth of documents, maps and aerial photographs illustrating the history of the Elkhorn Slough region. After digitizing and geo-referencing the maps and aerial photography, he was able to develop historical habitat change summaries for many areas of the watershed. Such analyses are an essential tool for understanding current ecological conditions and evaluating the potential for habitat restoration. For example, the qualitative and quantitative analysis of maritime chaparral in the Slough watershed allowed the Reserve to describe the decline of this threatened habitat type as well as evaluate potential restoration methodology. The Reserve has since provided information gained through this historical ecology research to scientists, coastal managers and land-use planners via two CTP workshops. The workshops were similar in structure to those on blue gum eucalyptus, providing information on the ecology of maritime chaparral, as well as options for its conservation, protection and, when necessary, restoration.

NOAA commends the Reserve for its research in historical ecology. This valuable perspective provides a solid foundation for Slough research, as well as for conservation, restoration and adaptive management efforts.

Accomplishment: ESNERR's commitment to historical ecology research provides a valuable perspective for future scientific research, habitat restoration and Slough management, and can serve as a model for the NERR System.

4. Site Profile

NERRS implementation regulations require each reserve to develop a comprehensive site profile. A site profile is designed to: (1) compile scientific datasets relating to the reserve, (2) characterize the physical and biotic components of the environment, (3) synthesize the known ecological relationships within the reserve and its watershed, (4) trace the impact of natural and human disturbances, and (5) explore the need for future research, education and management initiatives. In the last 312 findings, NOAA required ESNERR (in a Necessary Action) to develop and produce a site profile for Elkhorn Slough. *Changes in a California Estuary: A Profile of Elkhorn Slough* was subsequently completed in 2002.

ESNERR addresses all of the components required in a site profile in this impressive book. *Changes in a California Estuary* compiles the scientific research conducted in Elkhorn Slough region since the 1920s, documents the natural and human impacts that have shaped the ecosystem, and identifies specific areas for future research. Through the contributions of twenty-seven scientists and natural resource managers, this site profile presents a comprehensive view of current research and management in Elkhorn Slough and where it should be focused in the future. NOAA commends ESNERR on this exceptional document.

C. EDUCATION, INTERPRETATION AND OUTREACH

National Estuarine Research Reserves are federally designated "to serve to enhance public awareness and understanding of estuarine areas, and provide suitable opportunities for public education and interpretation." The reserve system provides a range of educational programming to key audiences depending on watershed and community needs and the specific capacity of each reserve. ESNERR offers a variety of education programs for school groups, teachers, coastal decision makers and the general public.

ESNERR's education program has grown considerably in this evaluation period, particularly through teacher training and curricula development, outreach to underserved populations, and the successful implementation of the Coastal Training Program. NOAA commends ESNERR education staff on their work.

1. Education Program Component

ESNERR continues to focus their education program on high quality teacher training workshops. By training teachers to lead their own classes on field trips to the Reserve, more than 8,000 students are able to experience the Slough annually—far more than could be reached by ESNERR staff alone. In this review period, ESNERR has built on this successful concept by partnering with the California State University at Monterey Bay (CSUMB) to provide teachers who attend Reserve environmental education workshops with Continuing Education Units. The Reserve also collaborates with the Environmental Education Certificate Program at CSUMB to offer professional recognition to teachers who learn how to bring environmental education into the classroom.

ESNERR is actively involved in a network of organizations providing opportunities for young people to gain experience in the environmental sciences. ESNERR education staff contribute to programs such as Camp SEA (Science Education and Adventure) Lab Monterey Bay and RISE (Recruitment in Science Education), that reach the continuum of grade school to high school age youths. In addition, the Reserve works closely with instructors from local colleges and universities to involve students in research, monitoring, restoration, and education projects that enhance their academic requirements in courses such as marine science and coastal ecology.

Most notably, ESNERR has joined regional partners in a concerted effort to engage minority and underserved populations in the Monterey Bay area. For example, ESNERR collaborates with 25 other groups, lead by the Monterey Bay National Marine Sanctuary, to develop curricula for, and provide environmental education to, Latino communities in the Monterey Bay area through the MERITO (Multicultural Education on Resource Issues Threatening Oceans) program. Implemented in 2002, the MERITO program includes bilingual curricula and resources development, after-school and adult education programs, field trips, and college internships for the Monterey Bay area's diverse communities. Currently fourteen schools and groups host the MERITO program, and teacher training workshops are funded through the Monterey Bay Sanctuary Foundation and ESNERR. ESNERR also offers family field experiences geared toward the Latino community twice per year. The education staff's dedication to serve these populations is evident and to be commended.

Accomplishment: ESNERR has shown great commitment to providing educational opportunities for underserved populations in the region.

Further expanding the reach of ESNERR's education program, Reserve staff have been working with CSUMB to develop the capacity to do virtual field trips over the web, and have completed one "trip" so far. This technology will help teachers integrate the Elkhorn Slough environmental curriculum in their classrooms throughout the school year. Students will be able to "visit" the Slough throughout the year to observe seasonal ecosystem changes, as well as research and monitoring efforts before and after their actual field trips. The use of remote learning in this way is an exciting opportunity for both educators and the public; NOAA encourages ESNERR to move forward with the development of this technology.

2. Coastal Training Program

An important aspect of a reserve's education program is the Coastal Training Program (CTP). The CTP is designed to inform coastal decision-making, improve coastal stewardship at local and regional levels through the application of science-based knowledge, and increase dialogue and collaboration among decision-makers. Planning for the program includes establishing a training advisory committee, conducting a market survey of training providers and an audience needs assessment, developing a program strategy that outlines priority coastal issues to be addressed, prioritizing target audiences, and creating a marketing plan.

ESNERR began development of their CTP in 2002 by hiring a full-time coordinator. The CTP market analysis was performed in the same year, with their needs assessment completed in 2003. The coordinator also created the CTP Steering Committee, whose membership includes representatives from the California Coastal Commission and the Monterey County Planning Department, two key audiences for the Program. ESNERR's CTP became fully operational in early 2004, upon completion and submission of all supporting documentation required by NOAA.

ESNERR's CTP has a goal of holding at least six major workshops a year. The number often exceeds this, however, in responding to the coastal management community's evolving needs. As determined from the market analysis and needs assessment, workshops are typically one day long and include a field component. The inclusion of a field component illustrates the CTP coordinator's interest in, and ability to, integrate information gained from current Reserve research into the workshops. To ensure that the wealth of information covered through CTP is not lost, the Reserve posts and maintains selected workshop materials and articles on their website. Referenced materials are organized according to four priority issues: habitat restoration, maintaining biodiversity, polluted runoff and sustainable human systems. The website is a remarkable resource for coastal managers and the general public, providing an abundance of science-based information, tools and techniques.

NOAA found that ESNERR successfully utilizes the wealth of research conducted in the Slough to inform CTP content. ESNERR's workshops are consistently of high quality, and are well respected and received in the scientific and management communities.

Accomplishment: ESNERR has developed and implemented an extremely successful Coastal Training Program. Workshop content is developed using the most current scientific information available, which itself is often a result of Reserve-funded research.

ESNERR has done an excellent job of promoting their CTP, and has come to expect nearly 100 attendees at each of their workshops. In addition to the workshops themselves, the Program offers a suite of follow-up options to coastal managers interested in additional information. DVDs of past workshops are available, and mini-workshops are often requested by local management agencies to review and expand upon CTP topics. A particularly innovative component of ESNERR's post-workshop service is the Coastal Training Network. The Network consists of coastal experts—former presenters—that have agreed to be available post-workshop to answer questions, review documents, visit field sites, etc. in their area of expertise. Response to the Network from the coastal management community has been very positive, and ESNERR is developing a means by which the experts can receive credit for their efforts.

Accomplishment: The Coastal Training Network developed by the CTP is highly innovative, and has been well-received and utilized by coastal managers.

The Reserve plans to enhance the program and meet future budget challenges by identifying and applying for outside grant money. NOAA commends ESNERR on this proactive approach to expanding the CTP.

D. Stewardship Program

Over the last few years, the NERRS has focused on developing a stewardship component to complement its existing research and education programs. At most reserves, Stewardship Coordinators are acting in a functional role, participating in aspects of research, monitoring, education, and implementation of resource management activities. The ESNERR Stewardship Program was initiated similarly, but has since found its niche quite literally in resource stewardship--the informed, responsible management of Slough resources. Specifically, the Program's mission is to provide for the long-term protection and restoration of native coastal and estuarine habitats by developing, implementing and monitoring sound resource management practices on the Reserve.

NOAA finds that ESNERR's Stewardship Coordinator has done an excellent job developing the program during the review period. The stewardship team has been proactive in identifying Reserve and watershed needs, resourceful with the capacity available, and professional in providing support to various Slough stakeholders. They work closely with the research program to develop management and restoration plans, and with ESF and volunteers to conduct stewardship activities throughout the Slough watershed. In order to link this successful program with regional conservation efforts, the stewardship team collaborates with the Education and Coastal Training Programs to educate and engage the public. Current Stewardship Program priorities include habitat restoration and management, and invasive species control. Information gained through these activities is critical to guiding and evaluating other Slough watershed management efforts.

1. Habitat Restoration and Management

ESNERR works with its cadre of volunteers and program partners to conduct a variety of habitat restoration and management projects throughout the Slough watershed. Stewardship projects range from the development of tools and techniques for resource management to physical restoration projects. Partners in these stewardship efforts include ESF, the California Conservation Corps, the California Department of Forestry and Fire Protection and the Resource Conservation District of Monterey County.

During this evaluation period, the Reserve has developed an impressive suite of new tools to aid in Slough habitat restoration and management, among them: a native plant inventory, GIS habitat maps, and a native plant greenhouse. The inventory and habitat maps help to prioritize and keep track of management efforts, while the greenhouse allows the Reserve to propagate thousands of native plants for use in watershed restoration projects. As with many of their stewardship efforts, the Reserve maintains the on-site greenhouse with the strong support of volunteers. The evaluation team was quite impressed with this project, which serves as a valuable hands-on

learning experience for the public by incorporating education and stewardship with scientific information gained from the research program.

Habitat restoration and management throughout the Slough watershed is informed by applied research conducted via the coordinated efforts of the stewardship and research teams at the Reserve. For example, the Stewardship Program is currently testing a number of land management techniques to determine the most effective coastal prairie restoration and protection strategies. Coastal prairies contain more plant species per square meter than any other grassland in North America, and are one of California's most threatened habitats. The numerous rare, threatened, and endangered species associated with this habitat require active management of the grasslands to continue to thrive. Initial observations indicate that a particular mowing regime may be effective at decreasing exotic annuals and increasing native wildflowers and bunchgrasses. Restoration techniques and lessons learned through research such as this have been applied to Reserve and private lands throughout the watershed. The Reserve works particularly closely with ESF, who owns and/or manages 3600 acres in the watershed, to affect areas outside the Reserve boundaries.

Accomplishment: ESNERR develops and successfully disseminates habitat restoration and management techniques that can be applied on lands throughout the Elkhorn Slough watershed.

2. Invasive Species Control

Control of non-native flora and fauna in the Elkhorn Slough watershed is a massive undertaking. Over one hundred exotic species have been documented on the Reserve alone. Because the ecology and threat of invasive flora varies, ESNERR's management is focused on those non-native species which have the greatest impact on native habitats and those which will become more difficult to control if action is delayed. Using criteria developed by the California Invasive Plant Council and the Colorado Natural Areas Program, ESNERR has identified the Reserve's ten most invasive plant species, and has mapped their distribution.

In order to control invasive species, the Reserve relies on current research and public education. ESNERR employs many different control measures that have been tested via applied research experiments on the Reserve. The evaluation team observed such a research site for the control of poison hemlock, one of California's most invasive plants. The stewardship and research teams collaborated with local students and professors to test the efficacy of mowing and burning as a control of poison hemlock. This investigation will not only provide the Reserve with valuable information to guide invasive species management, but also serves to educate the public about coastal stewardship.

One very successful education initiative for invasive plants focuses on the early detection of non-native species. The stewardship team developed and distributed "Least Wanted Weed" cards to staff and volunteers, who were tasked with identifying and reporting any invaders. This program has already resulted in the early detection and eradication of invasives including cotoneaster, acacia and jubata grass.

NOAA commends ESNERR on developing a well researched strategy for invasive species management.

E. Volunteer Program

Fundamental to inspiring a sense of resource stewardship within the coastal community is providing opportunities for the public to experience, to understand, and thus to care for, Elkhorn Slough. One way that the community can be active stewards of the resource is by volunteering. ESNERR has an excellent volunteer program that greatly benefits the Reserve and its programs, the Slough ecosystem, and coastal California as a whole.

The Volunteer Coordinator has been instrumental in engaging volunteers in a wide range of activities that support the research, education and outreach efforts of the Reserve. Ongoing docent activities range from collecting field data to habitat restoration to facilities maintenance. These volunteer opportunities, special events schedules and program updates are published in a monthly docent newsletter. Since 2003 Reserve staff have also offered biannual forums to summarize program activities, provide progress reports on specific projects aided by volunteers, and gather input from volunteer staff. NOAA believes that these forums are an excellent way to keep volunteers engaged in the work they do with and for the Reserve.

With a strong program already in place—approximately 100 active volunteers contributing over 7,000 hours annually—the Volunteer Coordinator has recently been focused on enhancing the docent experience. The Reserve now provides many enrichment and continuing education opportunities for volunteers to increase their knowledge and develop their skills. For instance, topical experts are often featured at monthly docent meetings to discuss current coastal issues, and hands-on events such as field trips and training workshops allow for direct interaction with visiting researchers and Reserve staff. Additional information on topics featured in these lectures and workshops are also published in the monthly newsletter.

Accomplishment: ESNERR has enhanced the volunteer experience by providing a variety of continuing education opportunities.

V. CONCLUSIONS

For the reasons stated herein, I find that the State of California is adhering to the programmatic requirements of the National Estuarine Research Reserve System in the operation of its approved Elkhorn Slough National Estuarine Research Reserve (ESNERR).

ESNERR has made notable progress in the following areas: conducting historical ecology research, providing educational opportunities to underserved populations, developing and implementing their Coastal Training Program, informing habitat restoration and management throughout the Slough watershed, and enhancing the volunteer experience.

These evaluation findings also contain six recommendations. These recommendations are in the form of two Necessary Actions and four Program Suggestions. The state must address the Necessary Actions by the dates indicated. If ESNERR does not update its management plan by September 30, 2006, as required by Necessary Action #4, NOAA will immediately initiate a problem-specific evaluation to address the Reserve's failure to do so. Upon completion of this focused evaluation, the State of California's operation and management of ESNERR may be found to be deficient, and thus the State of California may be found to be not adhering to the requirements of NERRS' regulations as adopted by the Secretary of Commerce under the CZMA or the terms of its cooperative agreement. The Program Suggestions should be addressed before the next regularly-scheduled program evaluation, but they are not mandatory at this time. Program Suggestions that must be repeated in subsequent evaluations may be elevated to Necessary Actions. Summary tables of program accomplishments and recommendations are provided in the Executive Summary.

This is a programmatic evaluation of ESNERR that may have implications regarding the state's financial assistance awards. However, it does not make any judgment on or replace any financial audits.

signed Eldon Hout
Eldon Hout
Director, Office of Ocean and Coastal
Resource Management

27 March 2005
Date

VII. APPENDICES

APPENDIX A. ESNERR'S RESPONSE TO 2000 EVALUATION FINDINGS

1. Necessary Action: The ESNERR Management Plan must be submitted to OCRM for review within eighteen (18) months of the receipt of these final findings.

ESNERR Response: This Necessary Action was not met. During 2000 and 2001 a variety of strategic planning meetings for the management plan revision took place. A set of belief statements, a vision statement, and a mission statement were drafted; resource issues were identified and targets were chosen based on urgency, regional gaps, and ESNERR strengths. Soon thereafter, staffing shortages and turnover, as well as other workload demands, resulted in a lull in activity on the management plan process. It became apparent that the plan would not be completed with current staffing levels and it would be necessary to hire a management plan coordinator to help finish the project. ESNERR thus applied for, and was awarded, state funds for the preparation of their management plan. A state contract scandal effectively halted progress with the management plan contract, as the state placed strict restrictions on the contracting process. Finally, in spring 2005, ESNERR was able to hire a management plan coordinator. The state grant for the contract will expire June 30, 2006, by which time ESNERR plans to have completed their draft management plan.

2. Program Suggestion: As the ESNERR develops its Management Plan, infrastructure issues such as electronic technology, laboratory facilities and maintenance of structural integrity should be considered. At minimum one bridge needs to be replaced hopefully through the application pending NOAA approval, and the roadway over an earthen berm either needs to be downgraded to a path with a new roadway developed or funds need to be identified to stabilize the berm and establish the road.

ESNERR Response: Infrastructure issues remain a top concern at the Reserve. The dynamic coastal environment as well as the age of many of the existing structures makes infrastructure maintenance issues an ongoing priority. The issues specified in the Program Suggestion have been addressed as follows:

- Electronic technology: All staff now have high speed internet and some computers are networked.
- Laboratory facilities: ESNERR is set to begin construction on a new research laboratory [details provided in NOAA evaluation findings].
- Replace bridge: The footbridge was replaced in 2002 using NOAA construction funds.
- Earthen berm: The Rookery Berm was covered with a wooden boardwalk and is passable by foot. It has still not been permanently repaired for vehicle traffic due to the high cost (preliminary estimates of \$100,000 to 300,000).
- Water system: The State contributed over \$290,000 for the replacement of the Reserve's water system in 2003 and this project was completed in 2004.

3. Program Suggestion: Administrative issues should be recognized as a part of the ESNERR Management Plan as it is developed, and recommendations which help to resolve time management as it relates to ongoing issues such as endangered species protection and habitat restoration should be incorporated.

ESNERR Response: Administrative issues as they relate to endangered species protection and habitat restoration are addressed by a combined effort of the stewardship staff, the research and monitoring staff, the reserve manager, and volunteers. A large effort has been made to address issues surrounding California Red-legged Frogs and Santa Cruz Long-toed Salamanders via several “amphibian summits”. In addition, ongoing habitat work and monitoring is conducted, including non-native predator management and disease control.

4. Program Suggestion: The Reserve Advisory Committee (RAC) and the Reserve should articulate a role for the RAC over the next three years and assess the representativeness of its membership.

ESNERR Response: Ongoing discussions have taken place regarding the future role of the RAC. However, it was decided that the most appropriate time and forum to restructure the RAC is within the management plan development process. Revisiting the role and structure of the RAC will be one of the key planning efforts in the management plan process.

5. Necessary Action: The site profile for the ESNERR must be submitted to OCRM for review within one year of the receipt of the final findings.

ESNERR Response: The ESNERR Site Profile, Changes in a California Estuary, was completed in 2002. This document has been widely distributed and is very well-received.

6. Program Suggestion: The CDFG must display a good faith effort over the next three years to secure state funding for the research coordinator, the Administrative Assistant, and other positions.

ESNERR Response: This program suggestion has not been met partly due to severe budget shortfalls in the state of California, and partly due to the state position classification system. Over the last five years the CDFG has been required to eliminate about 600 positions statewide. Vacant positions have not only remained unfilled, but many have been completely eliminated. For example, the Reserve’s only CDFG maintenance position has been vacant for more than four years due to ongoing hiring freezes, and ESNERR has only recently received the funding and authority to fill it. Unfortunately, no appropriate candidates have been identified as of yet. The state is not currently funding either the Administrative Assistant or Research Coordinator positions. The former is funded by NOAA via the State and the latter by NOAA via the Elkhorn Slough Foundation. ESNERR continues to request state funding for the Administrative

position, but budget cuts have prevented any action thus far. As for the Research Coordinator position, ESNERR does not believe that the skills and qualifications necessary for such a position fit with those associated with any position in the state classification system. Therefore, the Reserve maintains that it is more advantageous to the quality of the program to hire this position (and others) through the ESF.

7. Program Suggestion: The ESNERR should engage in a strategic planning effort with its affiliate institutions and use the RAC as a resource to define what the goals of habitat restoration, conservation and management in Elkhorn Slough should be in the future.

ESNERR Response: This is an item that has been given an enormous amount of funding and attention over the last several years. The Reserve secured a federal Coastal Impact Assistant Program grant for \$300,000 to develop the Elkhorn Slough Tidal Wetland Plan. A Tidal Wetland Plan Coordinator was hired to organize and shepherd the process full-time and this has clearly been a key to the successes thus far. In addition to the Coordinator, ESNERR's research, stewardship, and management staff have dedicated a significant amount of time to this endeavor. This is a highly collaborative process involving the RAC, the scientific community, the Monterey Bay National Marine Sanctuary, the California Coastal Commission (our Coastal Zone Management partners), the local harbor, regulatory agencies, conservation groups, elected officials, and other stakeholders.

APPENDIX B. PERSONS AND INSTITUTIONS CONTACTED

Elkhorn Slough National Estuarine Research Reserve

Name	Title
Cammy Chabre	Stewardship Ecologist
Becky Christensen	Reserve Manager
Susie Fork	Research Biologist
Michelle Gutierrez	Administrative Assistant
John Haskins	Water Quality Specialist
Grey Hayes	CTP Coordinator
Steve Legnard	Maintenance/Habitat Assistant
Johnny Nesmith	CTP Assistant
Kenton Parker	Education Coordinator
Barbara Peichel	Tidal Wetland Plan Coordinator
Eric Van Dyke	Geographical Ecologist
Kerstin Wasson	Research Coordinator
Andrea Wolfolk	Stewardship Coordinator

Elkhorn Slough Foundation

Name	Title
Kris Beall	Administrative Director
Ken Collins	Assistant Land Steward
Kim Hayes	Land Manager
Caryn Hodges	Administrative Assistant
Jim Van Houten	ESF Board Vice President
John Kenney	Assistant Land Manager
Mark Silberstein	Executive Director
Stephen Slade	Development Director

Reserve Advisory Committee

Name	Affiliation
Carolyn Anderson	Resident
Kelly Cuffe	California Coastal Commission
Andrew DeVogelaere	Monterey Bay National Marine Sanctuary
Peter Douglas	California Coastal Commission
Lee Genz	Duke Energy
Yohn Gideon	Moss Landing harbor District
Eddle Mars	Monterey County Board of Supervisors
Simone Mortan	Monterey Bay Aquarium
Rick Starr	UC Sea Grant

California Department of Fish and Game

Name	Title
Rob Floerke	Regional Manager
Rick Parmer	Supervisor
Greg Hurner	Deputy Director Legislation
Cindy Catalano	Regional Administrative Officer

Program Partners

Name	Affiliation
Trish Chapman	California Coastal Conservancy
Charles Lester	California Coastal Commission
Michelle Templeton	Monterey Bay National Marine Sanctuary
Dawn Hayes	Monterey Bay National Marine Sanctuary
Leonard Davis	Docent President
Linda Jordan	Docent

Elected Officials

Name	Office
Congressman Sam Farr	United States House of Representatives
Lou Calcagno	Monterey County Supervisor

APPENDIX C: PERSONS ATTENDING THE PUBLIC MEETING

Name	Affiliation
David Fried	Friends, Artists and Neighbors of Elkhorn Slough
Linda Jordan	ESNERR Docent
Mari and Klaus Kloeppe	Friends, Artists and Neighbors of Elkhorn Slough
Deann Russell	Friends, Artists and Neighbors of Elkhorn Slough
Steve Schmeiser	Neighbor and Faculty, San Jose State University
Martha Van Dyke	ESNERR Docent
Sean R. Van Sommeran	Pelagic Shark Research Foundation

APPENDIX D: NOAA’S RESPONSE TO PUBLIC COMMENTS

NOAA received one written comment regarding the Elkhorn Slough National Estuarine Research Reserve (ESNERR). The comment is summarized below and followed by NOAA’s response.

Mari Kloeppe
Co-Chair, Friends, Artists and Neighbors of Elkhorn Slough
Moss Landing, California

Comment: Ms. Mari Kloeppe is the co-chair of a citizens’ organization in Monterey County called Friends, Artists and Neighbors of Elkhorn Slough (FANS). FANS’ mission is to preserve and enhance the Elkhorn Slough through public education, citizen activism and advocacy. Ms. Kloeppe wrote to express her appreciation for the assistance and leadership that Elkhorn Slough National Estuarine Research Reserve provides to FANS’ efforts. For example, Ms. Kloeppe specifically mentioned the education staff’s willingness to participate in the organizations’ Elkhorn Slough boat tours. FANS organizes these “floating workshops” to educate county decision-makers on efforts to protect and restore the watershed, and relies on the Reserve for current, science-based information. FANS also used Reserve information resources to develop their recommendations for the Monterey County General Plan update. In addition, Ms. Kloeppe wanted to acknowledge the important contributions that ESNERR provides to youth education initiatives, to land conservation efforts, and to ecosystem research and watershed restoration.

NOAA Response: NOAA agrees that ESNERR is a valuable resource to the Elkhorn Slough and Monterey County community. It is encouraging to hear about the variety of services the Reserve can provide to educate the public, inform land use decisions and promote stewardship of the Elkhorn Slough. NOAA thanks you for your comments.