

COASTAL CONSERVANCY

Staff Recommendation  
June 29, 2006

**HUMBOLDT BAY REFUGE *SPARTINA DENSIFLORA* ERADICATION**

File No. 06-065  
Project Manager: Melanie Denninger

**RECOMMENDED ACTION:** Authorization to disburse up to \$50,000 to the U.S. Fish and Wildlife Service to eradicate non-native dense-flowered cordgrass (*Spartina densiflora*) from portions of the Humboldt Bay National Wildlife Refuge.

**LOCATION:** Humboldt Bay, Humboldt County

**PROGRAM CATEGORY:** Resource Enhancement

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**EXHIBITS**

- Exhibit 1: Project Location
  - Exhibit 2: Humboldt Bay Refuge and *Spartina* Distribution
  - Exhibits 3a and 3b: Maps of Eradication Sites
  - Exhibit 4: Report on Pilot Study
  - Exhibit 5: Letters of Support
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**RESOLUTION AND FINDINGS:**

Staff recommends that the State Coastal Conservancy adopt the following resolution pursuant to Sections 31251 *et seq.* of the Public Resources Code:

“The State Coastal Conservancy hereby authorizes the disbursement of up to fifty-thousand dollars to the U.S. Fish and Wildlife Service (“FWS”) to undertake eradication of the invasive non-native plant species, *Spartina densiflora*, in portions of the Humboldt Bay National Wildlife Refuge, subject to the condition that prior to the disbursement of any funds, the FWS shall submit the following for the review and approval of the Executive Officer of the Conservancy:

1. A work program, budget and schedule for the project.
  2. The qualifications of any subcontractor to be used on the project.
  3. Evidence that it has obtained all necessary permits and approvals for the project.”
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Staff further recommends that the Conservancy adopt the following findings:

“Based on the accompanying staff report and attached exhibits, the State Coastal Conservancy hereby finds that:

1. The proposed project is consistent with Chapter 6 of Division 21 of the public resources code (Sections 31251 et seq.) regarding the enhancement of coastal resources;
2. The proposed project is consistent with the Project Selection Criteria and Guidelines adopted by the Conservancy on January 24, 2001.”

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**PROJECT SUMMARY:**

Staff is recommending that the Conservancy authorize the disbursement of up to \$50,000 to the U.S. Fish and Wildlife Service (FWS) to assist with the eradication of invasive, nonnative dense-flowered cordgrass (*Spartina densiflora*) from portions of the Humboldt Bay National Wildlife Refuge (HBNWR). The project is a priority for Conservancy funding because it will restore extensive areas of salt marsh within an estuary that supports some 100 species of fish and 200 species of birds. The project also addresses the invasive species removal objective of the Conservancy’s Strategic Plan (see “Consistency with Conservancy’s Strategic Plan Goal(s) and Objective(s)” below) and will carry out habitat recommendations of the Humboldt Bay Management Plan.

As it has in other west coast estuaries, non-native cordgrass has invaded Humboldt Bay salt marshes, disturbing natural functions. In Humboldt Bay, it occurs in over 90% of the salt marsh habitat, from low through high marsh elevations, often in dense stands. The closely spaced tussocks of cordgrass appears to disturb resting and roosting areas for shorebirds, refugia for small mammals, and the flow of fresh water and nutrients over the marsh plain, and to accelerate sediment accretion. In addition, the dense stands of cordgrass tussocks in the high marsh reduce plant species diversity and compete with two rare annual salt marsh plants, Humboldt Bay owl’s clover (*Castilleja ambigua* var. *humboldtiensis*) and Point Reyes bird’s beak (*Cordylanthus maritimus* ssp. *palustris*). A 1997 FWS study reported a dramatic increase in cordgrass frequency over the previous 10 years in the Mad River Slough Unit of the HBNWR, supporting the concern that cordgrass threatens to increase its disruption of the Bay ecosystem.

In accordance with the findings of a Conservancy-funded pilot study designed to identify locally appropriate eradication methods (see “Project History” below), the FWS will use volunteers and contractors to mow and manually dig out cordgrass from approximately 62 acres of HBNWR salt marsh (Exhibits 3a and 3b: Maps of Eradication Sites). The two rare plants, the Humboldt Bay owl’s clover and the Point Reyes bird’s beak, which occur adjacent to the cordgrass in some high marsh locations, will be protected by conducting eradication activities after they have set seed for the season. Unlike San Francisco Bay, where carefully selected herbicides are being used for invasive non-native cordgrass eradication, public opposition to the use of herbicides necessitates plant removal by physical means in the HBNWR. The FWS will follow the digging out of cordgrass with planting of native pickleweed (*Salicornia* ssp.) and saltgrass (*Distichlys* ssp.), monitoring for cordgrass regrowth, and re-eradication, as needed. Revegetation with plugs of the native salt marsh plants is expected to diminish recolonization by cordgrass seedlings.

The FWS has been very successful in working with volunteers and the California Conservation Corps to accomplish labor-intensive restoration within the HBNWR. On this project, it intends to work in the North Bay with the existing Friends of the Dunes, and in the South Bay with the currently forming Friends of Humboldt Bay National Wildlife Refuge. The FWS expects to engage additional volunteers from the Humboldt State University Natural Resources Club and from Explore Northcoast, a paddlers' group.

**Site Description:** Humboldt Bay (Exhibit 2: Site Map) supports some 100 species of fish and 200 species of birds, including those that rely on the bay as they travel the Pacific Flyway. During the late-nineteenth and early twentieth centuries, diking and filling reduced Bay salt marshes from an estimated 9000 acres to only 900 acres today. Bay habitat has been further disturbed by discharges of agricultural and urban runoff, industrial and recreational uses, and colonization by the aggressive nonnative plant, dense-flowered cordgrass (*Spartina densiflora*). The compact tussocks of cordgrass are now widely distributed throughout Humboldt Bay salt marshes, often replacing native marsh plants (Exhibit 2). Studies have also shown that the distribution and density of cordgrass is increasing.

The proposed cordgrass eradication project will be undertaken within units of the FWS refuge that are located in both the North Bay and the South Bay. Exhibit 3a shows proposed eradication areas in the North Bay in the Lanphere and Ma-le'l Dunes Units. Exhibit 3b shows those in the South Bay in the Salmon Creek, Hookton and White Slough Units.

**Project History:** Since the 1980s, the Coastal Conservancy has worked closely with the FWS, the Humboldt Bay Harbor, Recreation and Conservation District, and other stakeholders to protect and restore the fish and wildlife habitat of Humboldt Bay and adjacent dunes. The Conservancy has assisted with conservation acquisitions, development of plans and habitat restoration techniques, implementation of restoration, and post-project monitoring. The California Conservation Corps and volunteers have been essential in carrying out labor-intensive restoration activities in sensitive dune and wetland areas.

A 1997 FWS study reported a dramatic increase in cordgrass frequency over the previous 10 years in the Mad River Slough Unit of the HBNWR, supporting the concern that cordgrass threatens to increase its disruption of the Bay ecosystem. In 1998 and 1999, the FWS undertook mapping and observations of cordgrass and of two rare high salt marsh plants, Humboldt Bay owl's clover (*Castilleja antiqua* var. *humboldtiensis*) and Point Reyes bird's beak (*Cordylanthus maritimus* ssp. *palustris*). The study looked at all three plants because cordgrass had been observed to be encroaching upon the same salt marsh elevations at which the two rare plants exist. The FWS' February 2001 report on its findings noted among management implications that the "dense-flowered cordgrass continues to be a major threat to biological diversity" and that "identifying and applying control measures for this invasive plant is of the highest priority."

In April 2003, the Conservancy provided funding to the FWS to undertake a pilot study of techniques for eradicating cordgrass in Humboldt Bay (Exhibit 4). In contrast to San Francisco Bay, where cordgrass removal has relied heavily on the strategic use of selected herbicides, the FWS' Humboldt Bay eradication study avoided herbicides because strong public opposition makes their use infeasible. Instead, the methods tested were mowing of dense stands and manual digging of sparser stands, both scheduled to enable adjacent sensitive native species to set seed prior to cordgrass eradication, with monitoring to check for reappearance of cordgrass. The ample pool of volunteers dedicated to protecting and restoring the HBNWR provided much of

the manual labor during the study and is expected to do the same for the proposed grant project. Upon completion of the proposed project, when monitoring results have been analyzed, FWS staff anticipates pursuing eradication of cordgrass in additional areas of Humboldt Bay.

**PROJECT FINANCING:**

Coastal Conservancy	\$50,000
USFWS	<u>51,000</u>
<b>Total Project Cost</b>	<b>\$101,000</b>

The anticipated source of funds for this project is the Conservancy’s fiscal year 2004-05 appropriation from the Water Security, Clean Drinking Water, Coastal and Beach Protection Fund of 2002 (Proposition 50). Proposition 50 authorizes the Conservancy’s use of these funds for the purpose of protecting coastal watersheds through projects undertaken pursuant to the Conservancy’s enabling legislation (Division 21 of the Public Resources Code) to acquire, restore or protect water and land resources (Water Code Section 79570). The eradication of non-native cordgrass, which threatens Humboldt Bay, achieves these objectives and is consistent with Division 21, as discussed in detail below, under the heading “Consistency with Conservancy’s Enabling Legislation”.

**CONSISTENCY WITH CONSERVANCY'S ENABLING LEGISLATION:**

The proposed project will be undertaken pursuant to Chapter 6 (Sections 31251-31270) of the Conservancy’s enabling legislation, Division 21 of the Public Resources Code, regarding enhancement of coastal resources.

Under Section 31251, the Conservancy may award funds to public agencies and nonprofit organizations to enhance coastal resources that have suffered a loss of natural and scenic values. The salt marsh habitat of Humboldt Bay has been degraded by the introduction of invasive non-native cordgrass. This project will help restore the natural ecosystem by eradicating the cordgrass and replanting the native marsh vegetation.

Section 31253 authorizes the Conservancy to provide up to the total cost of any coastal resource enhancement project. The Conservancy’s proposed level of funding for the project has been determined through consideration of the total amount of funding available for coastal resource enhancement projects for the north coast.

**CONSISTENCY WITH CONSERVANCY'S STRATEGIC PLAN GOAL(S) & OBJECTIVE(S):**

Consistent with **Goal 5, Objective C** of the Conservancy’s Strategic Plan, the proposed project will serve to eradicate a non-native invasive species that threatens native coastal habitats from approximately 62 acres of Humboldt Bay salt marshes where it is replacing native vegetation, reducing nursery and nesting habitat, and competing with rare plants.

**CONSISTENCY WITH CONSERVANCY'S  
PROJECT SELECTION CRITERIA & GUIDELINES:**

The proposed project is consistent with the Conservancy's Project Selection Criteria and Guidelines adopted January 24, 2001, in the following respects:

**Required Criteria**

1. **Promotion of the Conservancy's statutory programs and purposes:** See the "Consistency with Conservancy's Enabling Legislation" section above.
2. **Consistency with purposes of the funding source:** See the "Project Financing" section above.
3. **Support of the public:** This project has broad public support, as indicated by letters received from Assemblymember Patty Berg, Senator Wes Chesbro, the California Native Plant Society, the University of California Cooperative Extension, and the Humboldt Bay Harbor, Recreation and Conservation District.
4. **Location:** The proposed project will be located within the coastal zone of Humboldt County.
5. **Need:** While the FWS and volunteers are contributing to the project, the balance of the funding is not available absent Conservancy participation.
6. **Greater-than-local interest:** The proposed project will restore Humboldt Bay fish and wildlife habitat of regional and statewide importance for resident and migratory species.

**Additional Criteria**

7. **Urgency:** The proposed project is urgent due to the need to prevent further spread of cordgrass and to restore habitat for Humboldt Bay fish and wildlife populations that are already stressed by urban, agricultural, and maritime impacts.
8. **Leverage:** See the "Project Financing" section above.
9. **Readiness:** Matching funds have already been approved, and the USFWS is prepared to proceed with eradication this summer.
10. **Realization of prior Conservancy goals:** In April 2003, the Conservancy funded a pilot study of invasive, non-native cordgrass removal in the Lanphere Dunes Unit of the Humboldt Bay National Wildlife Refuge. The purpose of that study was to evaluate the effectiveness of mechanical and manual methods for removing the cordgrass and discouraging recolonization. The proposed project will utilize the information gained through the pilot study in removing cordgrass from approximately 62 acres of the refuge.
11. **Cooperation:** The FWS has arranged with volunteers to assist with the project, as they did during the pilot study leading to this project.

**COMPLIANCE WITH CEQA:**

The proposed project is categorically exempt from review under the California Environmental Quality Act (CEQA) pursuant to 14 Cal. Code of Regulations Section 15304, in that it involves only minor alterations to the condition of land, water and/or vegetation but does not involve the removal of mature, healthy scenic trees. Section 15304(d) provides that this exemption applies to such activities in designated wildlife management areas, where the result would be improved habitat and wildlife resources or greater fish production. Restoration efforts will eradicate invasive, non-native plants and re-establish native vegetation in salt marsh habitats of the Humboldt Bay National Wildlife Refuge.