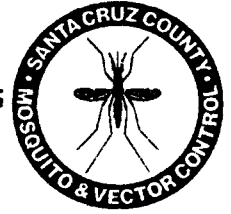




County of Santa Cruz



MOSQUITO AND VECTOR CONTROL DISTRICT

DAVID W. MOELLER
DIRECTOR

PAUL BINDING
MANAGER

January 22, 2002

Dena Robertson, Associate Planner
City of Santa Cruz
Parks and Recreation Department
809 Center Street
Santa Cruz, CA 95060

Subject: Comments on Jessie Street Marsh Management Plan

Dear Dena:

As the most effective, long term and least toxic Integrated Mosquito Management method is source reduction conducted through the review of wetlands development and enhancement plans, the Santa Cruz County Mosquito and Vector Control District (SCMVCD) has an interest in providing the following comments, based on recent experience in the area.

Background

In response to a request by the City of Santa Cruz through the Public Works and Parks and Recreation Departments, the SCMVCD responded to a mosquito infestation of the area surrounding the Jessie Street Marsh in August and September of 2001. The District and the City received numerous complaints from the public during that time. The area is not currently within the SCMVCD operational area, but the City reimbursed SCMVCD for time and materials.

The introduction of fresh water from San Lorenzo River backwater through the levee control gate about two weeks prior to the first appearance of the mosquito problem allowed for flooding of marshy and grassy areas and underground flood control drains. As the SCMVCD was contacted after the hatch and dispersal of many adult mosquitoes, our response was limited to controlling further larval breeding using aquatic larvicides and conducting monitoring operations.

This flooding provided habitat for several species of mosquitoes. One, *Ochlorotatus washinoi*, is an aggressive day and dusk biter that dispersed to cause nuisance perhaps a half-mile from the site. Normally breeding in flood plains in winter to emerge in spring, this species exploited the re-flooding of emergent vegetation in an unusual summer hatch.

Larval samples from the marsh and ditches, and adult trap collections also indicated high numbers of *Culex pipiens* (house mosquito) dispersing from the site. This is primarily a foul-water species, and was found in catch basins, drains and underground flood control structures. It is an important public health vector as it can transmit the encephalitis virus

from bird to bird and potentially to people and other mammals. It is the species most responsible for West Nile virus, currently spreading westwards from the Eastern U.S.

Review of Marsh Management Plan

It is likely the improvement to water quality in the marsh from the replacement of street runoff with river backwater should result in reduced mosquito breeding. Increasing the depth of the upper marsh, removing thatched cattails and creating open water would also reduce mosquito-breeding habitat, while enhancing the development of a diverse invertebrate and vertebrate predator base.

It is important to mention that newly disturbed and flooded sites tend to produce the most mosquitoes, while mature, diverse, permanent marshes tend to have an established predator base and better water quality if there is sufficient circulation and depth. In general, flooding / drying cycles tend to stimulate egg laying and hatching of floodwater mosquito species. Also, shallow, vegetated edges support the most breeding, more so on shoreline than islands, as shallows have reduced water quality and access to predators. If water depth is sufficient in some part of the marsh, a year-round, permanent pool could support predacious fish such as mosquitofish (*Gambusia affinis*) if appropriate, or native fish such as stickleback, a less effective mosquito predator.

The lower brackish marsh, if properly graded to drain, will be less of a problem when affected by marine tidal flushing in the spring, particularly if marine predators can access any brackish-water mosquito breeding. If shallow pools remain, floodwater or salt marsh mosquito species may breed if not re-flooded within the mosquito development cycle (a week to ten days).

It is assumed the proposed backflow valve for the storm water drain system will be helpful in preventing San Lorenzo lagoon water from filling the underground system (Figure 7-1, (5)) as water standing in underground drains and pipes could result in mosquito breeding if not pumped within the breeding cycle.

Use of Bats and Swallows

It is uncertain that bats will become established, as their preference is for shelters with higher insulation values than are found in most commercial bat houses. It is also possible that bats will relocate to attics and swallows to eaves and become structural and public health pests, posing a liability to the City.

It is not at all established that bats and swallows will spend the energy to catch mosquitoes when larger protein sources are available. They may even decrease beneficial insects such as dragonflies. In habitats where mosquitoes emerge in dense clouds this may be the case, however, in the Jessie Street area mosquito breeding could be light and still a problem due to housing proximity.

Bats and swallows should, at most, be considered as a complement to mosquito management through proper design, maintenance and operation of the marsh and ongoing

oversight by mosquito control professionals. The SCMVCD recommends that monitoring, consultation on slide gate operation and occasional intervention with mosquito larviciding materials be utilized for nuisance or public health intervention in this urban wetland.

Conclusion

Only in the absence of ongoing mosquito management would the SCMVCD agree with the authors of the marsh management plan when they report “The mosquito population is difficult to manage without the draining of wetlands or to have water areas with little or no vegetative breeding habitat...”

If the City so desires, the SCMVCD could provide services as current service area responsibilities permit. As indicated in previous correspondence, the most effective, economical, and efficient mosquito management services would be those rendered area-wide and year-round through annexation of the City to the District, to benefit residents on an operational level.

Our services are preventive in scope, and least-toxic and ecologically sustainable in method, in accordance with the intent of the City and County’s Integrated Pest Management policies. They include development review for public health hazard potential and wetlands restoration / source reduction consultation. Other informational services include assistance to residents with yellowjacket, rodent, fly, tick, bee and related problems, and limited public distribution of mosquito-eating fish.

We operate through a Cooperative agreement and certification with the California Department of Health Services, as a County Service Area under the direction of the Agricultural Commissioner and governed by the Board of Supervisors, and are empowered through the California Health and Safety Code (Div. 3, Ch. 5, Section 2200 *et. seq.*).

Please contact the SCMVCD at 454-2590 for any questions or comments regarding this review.

Sincerely,

DAVID W. MOELLER, DIRECTOR
SANTA CRUZ COUNTY MVCD

(Original signed)

Paul Binding, Manager
Santa Cruz County MVCD

DM:PB

Cc: Steve Hammack, Superintendent of Parks