

## DEPARTMENT OF FISH AND GAME

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15 February 2008

Dr. Beckye Stanton, Associate Toxicologist  
 CA Department of Fish and Game  
 Office of Spill Prevention and Response (OSPR)  
 1700 K Street, Suite 250, Sacramento, CA 95811

Re: SF08-3, Dungeness crab mortality

Dear Dr. Stanton,

I am reporting the results of an investigation of a recent crab mortality event, our case number SF08-3. I do not have the details regarding acquisition of the samples but I believe that they were collected by a crab fisherman that observed 100% mortality in a set of crab pots while other sets in the area had no mortality. There was some concern that the mortality could have resulted from exposure to spilled oil.

The crabs were delivered to my laboratory on 1/16/08 by OSPR Warden Todd Ajari. We received one large Dungeness crab and seven small crabs that also appeared to be (juvenile) Dungeness. The crabs arrived cool but with no ice. All of the crabs had undergone extensive necrosis, smelled terrible, and some of the tissues were very dark in color, presumably due to the production of melanin as an end result of the phenyloxidase cascade which can occur in dying crustacean tissue. The carapace widths and weights of the animals are shown in the table below:

| SF08-3# | Carapace Width, mm | Total Weight, gm |
|---------|--------------------|------------------|
| 1       | 130                | 974              |
| 2       | 73                 | 68               |
| 3       | 71                 | 50               |
| 4       | 68                 | 46               |
| 5       | 66                 | 40               |
| 6       | 59                 | 36               |
| 7       | 55                 | 32               |
| 8       | 41                 | 8                |

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We removed the carapace and excised various tissues from each animal, placed them in fixative, and produced 5µm, hematoxylin- and eosin-stained sections on glass slides that were examined under a microscope. We also examined fresh squash preparations of tissue from several of the animals.

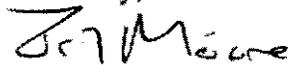
Due to extensive necrosis, the type and amount of information that can be expected to be obtained from a histological investigation of these animals is very limited. For example, spore stages of certain protozoa may resist degradation, as well as structural tissue of certain metazoan parasites. Most other tissue will be severely degraded, and post-mortem colonization by opportunistic bacteria, fungi and protozoa may occur.

Briefly, none of our observations will help elucidate the cause of death of these animals. Foci of bacteria were present in tissues from all of the animals; this is most likely due to post-mortem colonization rather than a contributor to mortality. Certain tissues such as gill and hepatopancreas could be recognized but little else could be determined. The tissue squash preparations did not reveal any relevant information.

An infectious disease is unlikely to be the cause of death of these animals. Infectious diseases typically do not cause 100% mortality and are unlikely to be so narrowly distributed. Localized hypoxia may be a more likely cause of death.

I apologize for not being able to provide more useful information. I would be happy to examine freshly dead or moribund crabs in the future if they are encountered. Please do not hesitate to contact me if you have any questions.

Sincerely,



James D. Moore, PhD

Senior Fish Pathologist, California Department of Fish and Game