Mesanophrys sp. Ciliate Disease

I. Causative Agent and Disease

Mesanophrys sp. (*pugettensis*) (syn *Anophrys*, *Paranophrys*) is a scuticociliate protozoan with holotrichous ciliation and a long trailing caudal cilium. These ciliates are primarily facultative pathogens of injured or captive crustaceans but have also been found in wild populations, most often in recently molted animals. Infestation is generally fatal causing a systemic disease with high mortality.

II. Host Species

Mesanophrys has a broad range with most reports occurring from several marine crab species in Europe and the Pacific Northwest. Closely related species have been reported in lobsters from Maine and Atlantic Canada and in cultured penaeid shrimp from China. In Alaska, *Mesanophrys* has been reported in wild isopods collected from Afognak Island and in captive blue and golden king crabs, Dungeness crabs and Tanner crabs from southeast.

III. Clinical Signs

Parasitized crustaceans are generally injured or otherwise stressed by captivity and exhibit lethargy, anorexia and ataxia followed by death. The hemolymph is cloudy or opaque from the presence of massive numbers of motile ciliates. Tissue pathology observed by histological examination is characterized by nearly complete destruction of peripheral and tissue hemocytes accompanied by massive tissue infiltration of the ciliates with severe systemic necrosis of major organs.

IV. Transmission

Transmission is horizontal from ambient seawater, usually requiring some form of host debilitation or external injury as a portal of entry. The life cycle of this ciliate is simple and direct with reproduction by binary fission allowing parasite numbers to increase exponentially.

V. Diagnosis

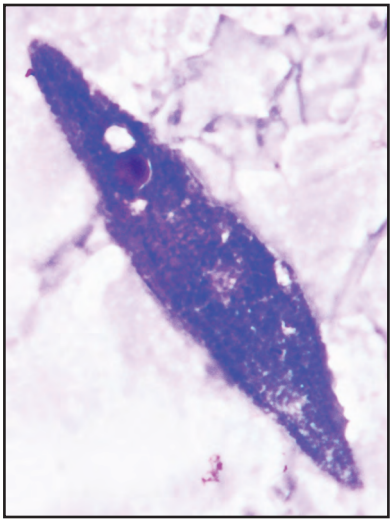
Diagnosis includes the typical gross clinical signs of injury, lethargy and mortality in conjunction with myriad numbers of elongate holotrichous ciliates each having a long trailing cilium in wet mounts of hemolymph and tissue smears. White focal areas of necrosis and coagulated hemolymph containing ciliates may also be observed on the surfaces of soft tissues (see bottom figure of blue king crab on page 111).

VI. Prognosis for Host

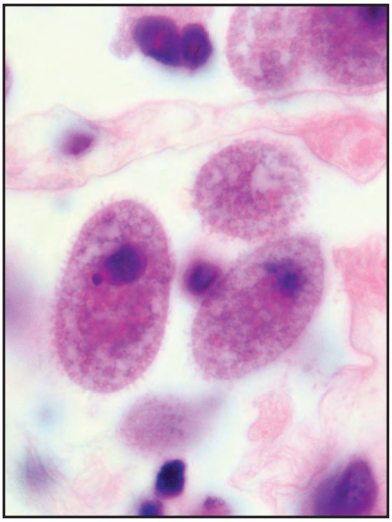
Mesanophrys generally causes high mortality in injured or captive crustaceans. Some measure of control for impounded animals may be achieved through improvement of environmental conditions and reducing crustacean densities to further reduce mechanical damage.

VII. Human Health Significance

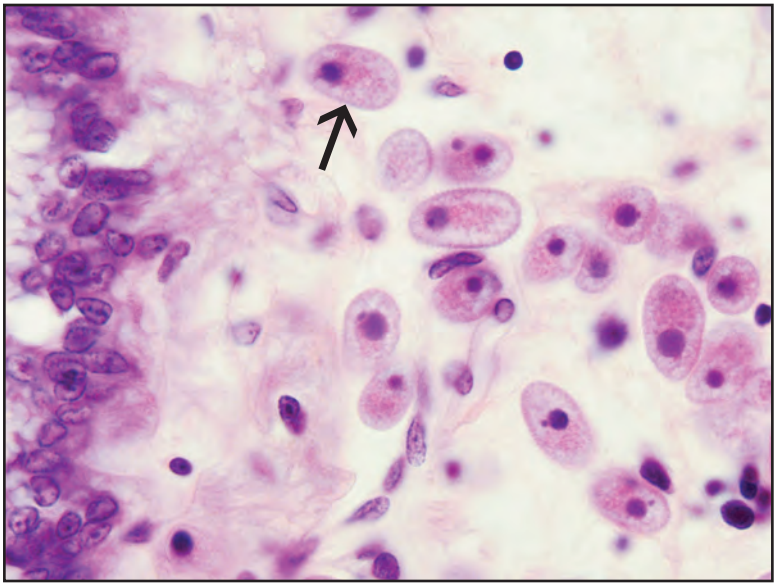
There are no zoonotic human health concerns regarding ciliate infestation of crustacean tissues.



Mesanophrys-like ciliate in hemolymph smear from parasitized Tanner crab



Higher magnification of *Mesanophrys*-like ciliates in histological section from blue king crab



Histological section of *Mesanophrys*-like ciliates (arrow) beneath the epidermis of a parasitized blue king crab