



NAAHTWG Slide of the Quarter – (March – June 2009) Infestation of black bream (*Acanthopagrus butcheri*) with the copepod *Caligus epidemicus* (DPI Victoria)

Case History

This case was submitted in March 2009 (2009-1140). A small number of black bream (*Acanthopagrus butcheri*) were found washed up dead along the banks of Lake Tyers, an estuarine lake in the east of Victoria. These fish appeared to be in poor condition and severely underweight. Numerous fish (unconfirmed reports of hundreds affected) were said to be suffering from “white eyes” and “tumours on the head” (Figure 1). Eight live black bream (*Acanthopagrus butcheri*) fish were submitted.

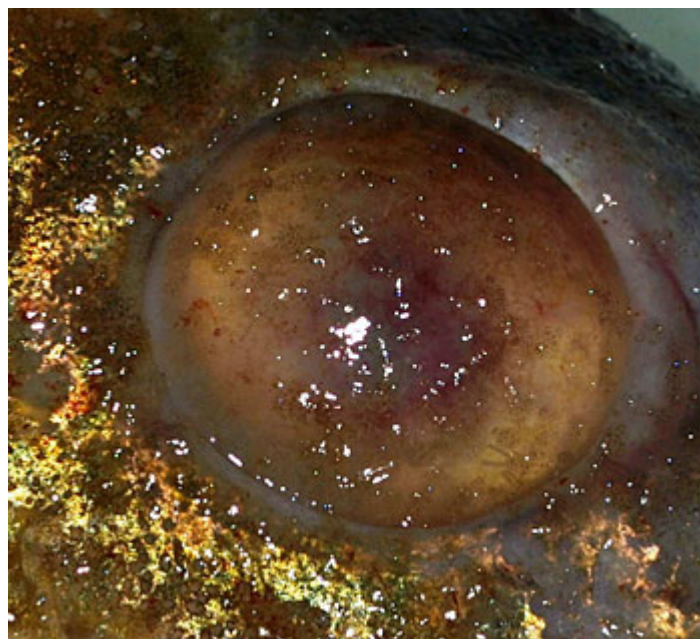


Figure 1

Histopathology

Sections show an eye approximately 15 mm diameter with a comparatively large, spherical lens. There is some variation between sections, and not all contain lens. There was no lens related pathology.

Corneal epithelium shows marked irregularity of the basal layer, with projections into the underlying stroma and, in some sections, separation and erosion, particularly overlying areas of superficial stroma necrosis. There is also some artefactual epithelial separation in some sections. Small to moderate numbers of inflammatory cells are tracking into the epithelium and there is mild-to-moderate intracellular oedema, patchy disordering of growth and roughening of the epithelial surface. There are one or more



cross sections of an invertebrate with complex structure consistent with a copepod crustacean on the epithelial surface (Figure 2).

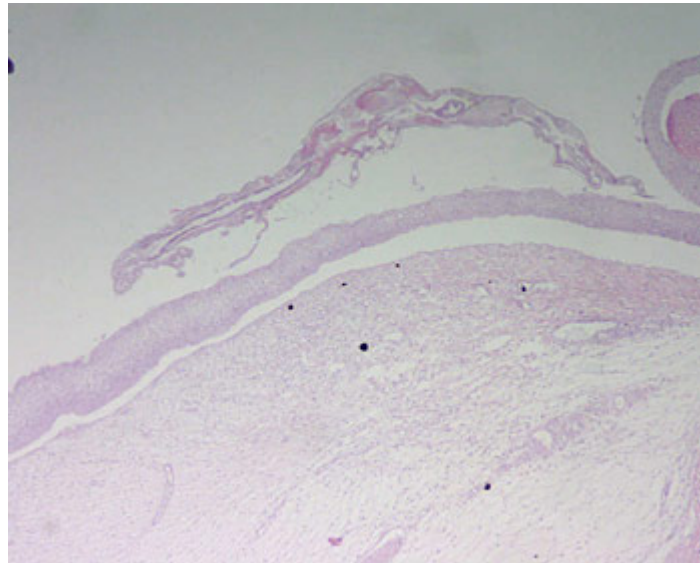


Figure 2

There is moderate-to-severe (variable between sections) superficial to midstromal, to full thickness corneal oedema, vascularisation and inflammation, mainly lymphohistiocytic and patchy, mild lymphohistiocytic iritis. The rete vessels of the choroidal gland show occasional mild to moderate lymphocytic cuffing and rare clusters of histiocytes containing coarse pigment granules. Other structures are unremarkable.

Morphological diagnosis

Diffuse, moderate to severe, chronic histiocytic and lymphocytic keratitis with associated superficial parasites.

Aetiological diagnosis

Infestation with the copepod *Caligus epidemicus*.

Comment

Disease due to this species of copepod has been recorded in the Gippsland lakes region of Victoria in the 1970s during extreme drought, elevated water temperature and hypersalinity of the lake system (1). Bream were reported to be seen attempting to swim up the Nowa Nowa River, which feeds the lake, in an attempt to find less saline conditions (an environment less suited to copepods). Species of mullet were also reportedly affected.

In this accession all of the bream had erythema and epidermal erosions of the skin of the dorso-lateral head and severe bilateral ocular lesions



including ulceration, neovascularisation and corneal oedema. One fish had a ruptured cornea with resulting panophthalmitis. Numerous copepods were also present on the caudal, pectoral and dorsal fins, where they were associated with mild erosions and hyperaemia (Figure 3).



Figure 3

Mark Hawes, Christina McCowan, Tracey Bradley and also thanks to Craig Hayward (SARDI).

(1) Hewitt GC. 1971 Two species of *Caligus* (Copepoda, Caligidae) from Australian waters, with a description of some developmental stages. *Pacif. Sci.* Vol. 25, no. 2, pp. 145-164. 1971.