

**From:** Riddell, Brian (Pacific)  
**Sent:** Friday, December 8, 2006 12:47 PM  
**To:** Cass, Alan <CassA@pac.dfo-mpo.gc.ca>; Parken, Chuck <ParkenC@pac.dfo-mpo.gc.ca>; Schubert, Neil <SchubertN@pac.dfo-mpo.gc.ca>; Beamish, Richard <BeamishR@pac.dfo-mpo.gc.ca>; Irvine, James <IrvineJ@pac.dfo-mpo.gc.ca>; Hyatt, Kim <HyattK@pac.dfo-mpo.gc.ca>  
**Cc:** Perry, Ted <PerryTed@pac.dfo-mpo.gc.ca>; Brown, Robin <BrownRo@pac.dfo-mpo.gc.ca>  
**Subject:** FW: Cultus Lake prespawning mortality 2006

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Just to keep things interesting ... another serious issue.

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-----Original Message-----

**From:** Whitehouse, Timber  
**Sent:** December 8, 2006 10:28 AM  
**To:** Rosenberger, Barry; Riddell, Brian (Pacific); Richards, Laura  
**Cc:** Benner, Keri; Grant, Sue  
**Subject:** Cultus Lake prespawning mortality 2006

Barry, Brian, Laura:

Based on early results from carcass surveys at Cultus Lake it is apparent that we are experiencing very high levels of pre-spawning mortality (PSM) in 2006. Recoveries in November indicate PSM rates for females exceed 85% at present. Only 2 of 85 females recovered on the grounds to date were successful spawners. This is very disturbing as 2006 is the only cycle year in which "reasonable" numbers of spawners were still present at Cultus. If this trend holds through the entire spawning period then the effective spawning population size could be < 300 fish in 2006. This would place us well below the recovery plan objectives for minimum abundance targets – across the cycle and for individual years.

The pattern being seen in PSM for late run sockeye in 2006 is much different from that observed since 2001. Prior to this year, where PSM rates have been high most of the mortality was weighted on the front end of the spawning distribution, with later timed fish exhibiting higher spawning success. In 2006, however, data at Adams and from Cultus indicate that later arriving spawners are exhibiting much higher rates of PSM than are the earlier arrivals. These observations stand in direct contrast to the leading hypothesis with respect to the mechanism responsible for elevated PSM rates – cumulative thermal exposure, resulting in osmoregulatory failure due to *Parvicapsula* infection – because the earliest arrivals (those subject to the greatest cumulative thermal exposure during migration in 2006) have shown highest spawning success, while later arrivals which were subject to much more moderate thermal conditions during Fraser migration are showing very high PSM rates.

Spawner surveys are on-going at Cultus, including the use of the ROV to search for carcass accumulations and to identify spawning areas. We are likely near or just past what should be the peak of spawning activity for this year so recoveries over the next two weeks will round out our sampling for determining natural Cultus spawning success for 2006. It will be important to integrate observations from the captured brood stock and the

acoustic tagging work to get the most complete picture possible on PSM at Cultus in 2006 – but it is looking like we will have very high levels. Not real encouraging on the conservation front when you consider exploitation rates for Cultus appear to be double the target agreed to during planning for 2006 fisheries.

Will advise as additional data become available. T.

Timber Whitehouse

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