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<i>Title</i>		Letter to Drs Reid, Watters and Jones in regard to “Disappearance of toothfish from McMurdo Sound”		
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ABSTRACT

We the undersigned wish to bring to your attention a potentially grave situation that needs to be addressed without significant delay. Together we have worked in the Ross Sea and vicinity for more than 300 person-years, and in the process have gained considerable knowledge about the Ross Sea ecosystem. Several recent findings indicate that the Antarctic toothfish (*Dissostichus mawsoni*) is rapidly disappearing from McMurdo Sound and vicinity, coincident with the maturation of the Ross Sea toothfish fishery from its initial experimental stage to its current near-quota status. Evidence is detailed in the EMM submitted document, "Decline of the Antarctic toothfish and its predators in McMurdo Sound and the southern Ross Sea, and recommendations for restoration." We are concerned that this is the first sign that the Ross Sea ecosystem is being irreparably altered, and the 40-50 year time series of unequaled climate records and responses of the biota to climate change are in jeopardy of being compromised. The Ross Sea climate record heretofore had been free of confounding factors related to fishing and other, direct anthropogenic factors.

SUMMARY OF FINDINGS AS RELATED TO NOMINATED AGENDA ITEMS

Agenda Item Findings

- 7 At the 2007 CCAMLR meetings, the Scientific Committee assigned the EMM with the task to "consider how the effects of fishing might be distinguished from the effects of climate change."

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2 May 2008 (revised; originally sent 17 April)

Gentlemen:

We the undersigned wish to bring to your attention a potentially grave situation that needs to be addressed without significant delay. Together we have worked in the Ross Sea and vicinity for more than 300 person-years, and in the process have gained considerable knowledge about the Ross Sea ecosystem. Several recent findings indicate that the Antarctic toothfish (*Dissostichus mawsoni*) is rapidly disappearing from McMurdo Sound and vicinity, coincident with the maturation of the Ross Sea toothfish fishery from its initial experimental stage to its current near-quota status.

Evidence is detailed in the EMM-submitted document, "Decline of the Antarctic toothfish and its predators in McMurdo Sound and the southern Ross Sea, and recommendations for restoration," the subject of which we request be made an agenda item and then given serious consideration at the next CCAMLR meetings, especially within the working groups on Fish Stock Assessment (FSA) and Ecosystem Monitoring and Management (EMM), and ultimately the Scientific Committee and Commission itself.

We commend CCAMLR for holding as its highest standard the concept of "precautionary management" (e.g., Constable et al. 2000. ICES Journal of Marine Science, 57, 778-791; Croxall & Nicol, 2004, Antarctic Science, 16, 569-584). Given Article 11 of the CCAMLR convention, such a philosophy is needed especially when a fishery is operating without full knowledge of its effects on an ecosystem. Various fishery scientists have made admirable contributions to understanding this fishery and its stock, using tools such as mark-recapture and CPUE within the fishery, and as indicated in many CCAMLR reports. However, lacking in the program, and also pertinent to Article 11, has been indirect

measures of how the stock of toothfish, and the food web of which it is a part, has been fairing under fishing pressure.

We realize that CCAMLR's goal is to fish the Ross Sea toothfish to 50% of its pre-exploitation biomass in 35 years, under the assumption that this would be precautionary for toothfish fisheries. However, an unexpected and worrisome decline has occurred as detected at the stock periphery but involving a predator that is one of the most important in the Ross Sea ecosystem. Moreover, while researchers in at least three national Antarctic research programs have been investigating the effects of climate change on the Ross Sea ecosystem, with at least 5 time series now extending more than 40 years, they now apparently have been blindsided by the impacts of over-fishing. In the latter time series, we are referring to: i & ii) annual counts of Adélie and Emperor penguins; iii) benthic community composition and growth; iv) Weddell seal demography and population dynamics; and v) toothfish prevalence as indicated by scientific catch rates (yet to be fully analyzed). There are, of course, matching time series, as well, of the physical habitat properties, practically without parallel elsewhere in the Southern Ocean, e.g. salinity, ocean temperature, sea ice and weather, and to variation in which the biota has been responding.

Assuming that the CCAMLR secretariat is serious about continuing the use of "precautionary management" in its practical implementation of the Convention, we ask that the situation that has developed in the southern Ross Sea be given very serious consideration at the 2008 CCAMLR meetings. This could well serve as a practical test of the effectiveness of the CCAMLR regime. We further ask, in keeping with Article 11 of the CCAMLR convention and as noted in the attached paper, that a steep reduction in Total Allowable Catch be implemented on fishing over the Ross Sea continental shelf and slope (SSRUs 88.1 H - L), including a moratorium for fishing over the shelf. These adjustments to fishing should remain in place until:

1. the McMurdo Sound/southern Ross Sea toothfish population recovers;
1. a research program is in place to investigate the ecological ramifications of a likely major perturbation to the regional food web (owing to loss of a major top predator), including assessment of ecosystem effects of the fishery and ecosystem recovery potential; and
2. a monitoring program has been initiated to keep track of ecosystem trends throughout the Ross Sea over the long term and establish a time series of related predator populations (seals, whales, etc) along Victoria Land.

Thank you.

Concerned Ross Sea researchers:

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