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Committee Secretary  
Joint Standing Committee on Treaties  
Department of House of Representatives  
P. O. Box 6021  
Parliament House  
Canberra  
ACT 2600

**Letter of Support for Cairns Marine Aquarium Fish Pty Ltd.**

**Response to the Human Society International submission to the Joint Standing Committee on Treaties regarding 2007 Amendments to Appendices I and II of the Convention on International Trade in Endangered species of wild fauna and flora.**

To whom it may concern,

With this letter we would like to acknowledge the invaluable support Cairns Marine Aquarium Fish has shown by allowing us to observe and behaviourally test sawfish in their facility for our research project on the sensory biology and feeding behaviour of sawfish. We would like to point out that the continuation of this project is solely dependent on our cooperation with Cairns Marine Aquarium Fish. By collecting sawfish from the wild and allowing us to research their behaviour, Lyle Squire Jnr. is actively participating in broadening our knowledge on sawfish behaviour, with further implications on sawfish conservation globally and within Australia.

The School of Biomedical Sciences at the University of Queensland is host to a large research project on the sensory biology and prey capture mechanisms of sawfish, in cooperation with Cairns Marine Aquarium Fish (CMAF) and Underwater World Mooloolaba. This multidisciplinary, non-invasive project is the only one of its kind worldwide and focuses on the use of the saw during feeding, the sensory adaptations of the saw to enable detection of prey and potential predators and the behaviour of sawfish for improved management of this unique and endangered group.

Although the project is non-invasive and examines the behavioural sensitivity of the sawfish to water currents, electrical fields (produced by prey) and light, the research is carried out in captivity. One important aspect of our work is to identify the natural behaviours displayed by sawfish, in particular the freshwater sawfish, *Pristis microdon*, in the context of prey manipulation. For a scientifically relevant and robust study of this type, we must have access to specimens that are acclimatised to captivity but have not yet adapted their behaviours to feeding routines and long-term captivity, like those specimens in public aquaria. Therefore, the ability to utilise captive animals in cooperation with

CMAF is vital. The remoteness of sawfish populations in Australia and the associated costs of capture and transport would make this project impossible if we did not have the continued support of CMAF.

The results of this study will reveal the optimal environmental conditions under which these species survive (in both public aquaria and in the wild), the use of the saw in feeding and more social contexts (i.e. hierarchies, reproduction) and management strategies for ensuring these species are adequately protected. This project is supported by two University of Queensland International Research Scholarships (UQIRA for tuition fees and a UQILAS for a living allowance) and an Endeavour Europe Award to Ms. Barbara Wueringer (a PhD student dedicated to this project for a period of three and half years in addition to a grant from the Sea World Rescue and Research Foundation Inc. (Gold Coast Australia). Moreover, an Australian Research Council Linkage grant has been submitted in conjunction with CMAF, where CMAF has made further in-kind and cash contributions in the order of \$250,000 over 2 years. This follows a successful grant from UQ (First Link Grant) to initiate collaborative discussions with CMAF.

The project is headed by Professor Shaun P. Collin and Dr. Nathan Hart (School of Biomedical Sciences at The University of Queensland). However, although seated at The University of Queensland, the research project is also an international collaboration with Florida Atlantic University, USA (Associate Supervisor Dr. Stephen Kajiura), which reflects the commitment and collaborative nature of this work and the worldwide importance of input from CMAF.

Our project will gather detailed information on sawfish behaviour, the relative importance of sensory input to characterise the optimal conditions for survival. This vital information will be conveyed to the scientific community (via high profile scientific journal articles and presentations at international conferences), the public, public aquaria, and commercial aquarium collectors. Understanding the behaviour of these species will enable the effective implementation of captive breeding programs and generally enhance conditions of captive animals. For example, the assessment of interactions of sawfish (either to conspecifics, congenics or other species of elasmobranchs and teleosts) maintained in one tank will produce a catalogue of behaviours related to stress and enable aquarium employees to quickly assess the conditions of captive animals and successfully manage any long term health issues. Moreover, understanding the natural stimuli that a species uses to capture prey is vital for the implementation of captive breeding programs, as only specimens capable of feeding in the wild can be reintroduced to their natural habitat. Even observations of wild sawfish can only be interpreted if all behavioural components of the respective species are known. Another important aspect of our work is to successfully develop devices that can repel sawfish from commercial fishing gear (eg. Gill-nets). In order to develop such devices, the capabilities of the sensory systems have to be known.

Populations of all species of sawfish found in the Gulf of Carpentaria are considered to be the last viable populations globally. Therefore, this research project, in cooperation with CMAF, is unique worldwide. We would like to point out that our research cannot be conducted with animals in public aquaria, as they have adapted to feeding times and dead prey and therefore do not display their natural feeding behaviours anymore. Information on sawfish behaviour will also aid in conservation efforts worldwide, especially as virtually nothing is known about these animals and the use of their saw in feeding (a single paper exists, describing the feeding behaviour of a single specimen of one species of sawfish – Breder, CM. 1952 On the utility of the saw of the sawfish. *Copeia* 2:90-91).

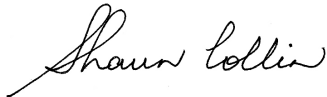
In order to ensure that this important research continues, we depend on the continued support of CMAF. Behavioural observations and experiments on electroreception commenced in January 2007. Preliminary results on the prey manipulation behaviours of *Pristis microdon* were presented at the annual meeting of the American Elasmobranch Society in St. Louis, Missouri in July 2007 and at the Vision Down Under Conference in Palm Cove, Queensland, in August 2007. This work is continuing and will identify crucial thresholds in sensitivity to prey.

At this stage, the ethogram (behavioural breakdown of the feeding strategies in sawfish) of *Pristis microdon* comprises 40 behavioural categories, of which 19 are behaviours that regularly occur during the day, and 21 are behaviours associated with feeding. *P. microdon* uses the saw in 5 behaviours associated with feeding. Moreover, sawfish use electroreception when locating prey, as indicated by our preliminary results. Sawfish readily attack prey-simulating electric dipoles presented both on the substrate and in the water column, 20 cm above the substrate. As only 9 specimens of *P. microdon* were observed during feeding and tested for their electroreceptive capabilities, this part of the study need to continue.

**In summary, we strongly support the vital and valuable contribution made by CMAF to our large research program and the conservation needs of sawfish worldwide. We are confident that with the unique expertise and knowledge of CMAF, sawfish will always be in safe hands and together with targeted research, efforts to protect these majestic animals and highlight their plight to the public will become a reality. Therefore, we strongly recommend that Australia DOES NOT move the freshwater sawfish, *Pristis microdon* from Appendix II to Appendix I.**

We are happy to discuss this further and if you need any other information, please do not hesitate to contact us at the above address.

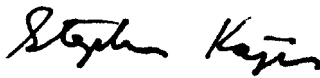
Yours sincerely,



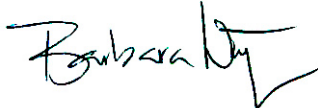
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Dr. Stephen Kajiura  
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