

## Summary

### **7 scientists expose massive scientific incompetence - or worse – at James Cook University**

The paper (Clark et al., 2020) by Timothy Clark, Graham Raby, Dominique Roche, Sandra Binning, Ben Speers-Roesch, Frederik Jutfelt and Josefin Sundin is a magnificent example of a comprehensive and very brave scientific replication study. The 7 scientists repeated experiments documented in eight previous studies on the effect of climate change on coral reef fish see if they were correct.

Clark et al. (2020) found 100% replication failure. None of the findings of the original eight studies were found to be correct.

All the erroneous studies were done by scientists from James Cook Universities highly prestigious Coral Reef Centre. They were published in high profile journals, and attracted considerable media attention.

The major findings of the original studies that were found to be wrong were that high CO<sub>2</sub> concentrations cause small reef fish to

- lose their ability to smell predators, and can even become attracted towards the scent of predators,
- become hyper-active,
- lose their tendency to automatically swim either left or right, and,
- have impaired vision.

This is the second time these 7 authors have got together to reveal a major scientific scandal. They were the whistle blowers of the infamous Lonnstedt scientific fraud in 2018. Lonnstedt, originally a PhD student at JCU, is also one of the scientists involved with these latest erroneous studies. She was found guilty of fabricating data in Sweden.

<https://www.sciencemag.org/news/2019/09/can-you-spot-duplicates-critics-say-these-photos-lionfish-point-fraud>

JCU has failed to properly investigate possible scientific fraud by Lonnstedt. Government funding agencies should insist that the highest responsible officer at JCU be sacked to send a message that institutions must take fraud seriously and not try to cover it up.

I was fired from JCU in 2018 after stating that work from JCU's coral reef centre was not trustworthy. The latest work by Clark et al. (2020) is more evidence that those comments had considerable substance.

I was awarded \$1.2M for wrongful dismissal by the Federal Circuit Court in 2019. JCU has appealed the decision which will be heard in May.

## **Replication and Science Quality Assurance**

Clark et al. (2020) is exactly the type of replication study that I have been requesting for other scientific evidence regarding the Great Barrier Reef.

Such replication studies have been opposed by all the major GBR science institutions.

Clark et al. (2020) shows a 100% failure rate of the replication tests, which is higher than the science standard of about 50% failure rate for most peer reviewed literature.

Clark et al. (2020) demonstrates, yet again, the inadequacy of peer review as a quality assurance check for scientific evidence that may be used to develop important public policy decision.

I have been proposing an “Office of Science Quality Assurance” that would be in charge of replication and audit studies to test scientific evidence to be used for government policy decisions.

### **James Cook University (JCU) Australian Research Council Centre of Excellence for Coral Reef Studies (ARCCoE)**

The replication tests were performed on work mostly authored by scientists from JCU’s ARCCoE.

The 100% failure rate of these tests indicate that there is a serious quality assurance (QA) problem within that organisation.

I have been saying since 2015, in both public statements and the scientific literature, that the ARC COE has a QA problem. The head of the ARC COE made complaints to the Vice Chancellor of JCU about these public comments.

Those complaints led to my dismissal from JCU in 2018 after an almost unbroken 40 year association with the university.

Clark et al. (2020) demonstrates beyond doubt that my statements on Quality Assurance had considerable substance.

### **Scientific Fraud**

No direct evidence of fraud was presented in Clark et al. (2020)

There is, however, considerable evidence of very lax scientific standards such as the lack of videoing of the behavioural experiments. This is a remarkable omission considering that videoing experiments is very easy. Combined with a 100% replication failure rate, it is clear that there was not an institutional culture of high scientific standards and integrity at the JCU ARCCoE.

Oona Lonnstedt, a PhD student at JCU, was trained within this lax institutional culture. She is an author of one of the studies tested in Clark et al. (2020).

She was later proven to be fraudulent by the very same authors of Clark et al. (2020) for work she did in Sweden.

There is compelling evidence that other work she did at JCU on Lionfish may be fraudulent.

<https://www.sciencemag.org/news/2019/09/can-you-spot-duplicates-critics-say-these-photos-lionfish-point-fraud>

### **The response of JCU to Lonnstedt's fraud**

JCU has failed to properly investigate Lonnstedt's PhD and Post-Doc work at JCU since she was found guilty of fraud in Sweden. JCU has repeatedly said it would investigate with an external review but it appears that the committee to do this has not been appointed almost 2 years after she was found guilty of fraud in Sweden.

Scientific fraud is a serious issue. The integrity of science is at stake.

Failure to investigate fraud when there is a strong *prime facie* case that it has occurred is a far greater crime than fraud itself. It is a failure at the highest levels of an institution.

It demonstrates that fraud will be tolerated at James Cook University.

### **Suggested response by funding agencies**

JCU receives large sums of tax payer funds and there is an expectation by science funding organisations that fraud would be properly investigated.

Science funding bodies, such as the Australian Research Council, should insist that a high penalty be paid by the highest officers of the University who were ultimately responsible for the failure to investigate possible fraud.

If this does not occur, funding bodies should withdraw all support for JCU.

A message must be sent to other science organisations and universities that there is an expectation that fraud will be investigated properly.

### **Other**

The results of Clark et al. (2020), as the authors mention, do not mean that ocean acidification is not a serious environmental threat. They reveal that the effect of high CO<sub>2</sub> levels on reef fish behaviour is not a concern. As an aside, in my opinion ocean pH changes are a credible, though not proven, threat to the GBR. This is in contrast to other well publicised threats, such as from agriculture or modest temperature increases, which I do not believe are a significant threat.