

# Skin cancer identified for the first time in wild fish populations

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Widespread skin cancer has been identified for the first time in wild marine fish populations, new research has shown.

A collaborative study between Newcastle University, UK, and the Australian Institute of Marine Science published today in the academic journal *PLoS ONE* - reveals the incidence of melanoma in the coral trout, a species found on the [Great Barrier Reef](#) and directly beneath the world's largest hole in the ozone layer.

This is the first time skin cancer has been diagnosed in [wild fish](#) populations and the team, led by Newcastle University's Dr Michael Sweet, say the appearance of the melanoma is almost identical to that found in humans.

"Further work needs to be carried out to establish the exact cause of the cancer but having eliminated other likely factors such as [microbial pathogens](#) and marine pollution, UV radiation appears to be the likely cause," explains Dr Sweet.

"Studying disease in wild [fish populations](#) is very time-consuming and costly so it's hard to say how long the disease has been around. However, what we do know is that it is now widespread in the coral trout population effecting three different species of this type of fish and we would not be surprised to find it in other species as well."

The study, which involved experts from Newcastle University, the

Australian Institute of Marine Science and James Cook University, Australia, looked at *Plectropomus leopardus*, otherwise known as the common coral trout.

The coral trout is an iconic and highly valued species that occurs throughout the western Pacific and in Australia supports a high-value fishery on the Great Barrier Reef.

Diseased fish were caught in two locations in the southern Great Barrier Reef Marine Park – Heron Island and One Tree Island – but its occurrence throughout the rest of its range is currently unknown. Anecdotal evidence suggests minimal occurrence in other regions of the GBR and in other coral trout species, but further research is required to confirm this.

Of the 136 fish sampled, 20 (15%) showed dark lesions on the skin – the lesions covered as little as 5% of the skin ranging to full coverage and an almost entirely black appearance.

Dr Sweet said the numbers were significant.

"The individuals we looked at had extensive – but only surface – melanomas," he explained.

"This means the cancer had not spread any deeper than the skin so apart from the surface lesions the fish were basically healthy.

"Once the cancer spreads further you would expect the fish to become quite sick, becoming less active and possibly feeding less, hence less likely to be caught. This suggests the actual percentage affected by the cancer is likely to be higher than observed in this study."

UV-induced melanoma in fish has until now only been seen under

laboratory conditions and has been used as a model to study the progress of human [skin cancer](#) due to the similarities in the disease.

In the lab, hybridised fish were found to be more susceptible to [UV radiation](#) due to exposure of the so-called 'Xmrk' gene. In the case of coral trout cross-breeding – or hybridisation – may also be occurring and play a role in the coral trout's susceptibility to the disease.

Dr Michelle Heupel from the Australian Institute of [Marine Science](#) stated: "This is a crucial finding in an iconic and high value reef species.

"Given climate change scenarios and continuing alteration of coral reef environments understanding the cause of this disease is important to continued conservation and management of reefs and their inhabitants."

The next step in the study is to look at a much larger sample and determine the extent of disease presence and causation within the populations.

**More information:** "Evidence of melanoma in wild marine fish populations." M J Sweet, N Kirkham, M Bendall, L Currey, J C Bythell, M Heupel. PLOS ONE. August 2012.

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