



The Dragons of NSW

Citizen Science Program

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Ancalagon the Black, Smaug, Ghidorah; the dragons of old were deadly and universally feared. Modern renditions of these mythical creatures, such as Toothless, Mushu and Norbert are lovable, magical creatures. With their long necks and tails, bat-like wings and a touch of fire, dragons lived in our imagination only.

Yet real dragons do exist. Here in NSW we have Water Dragons on land and Weedy Dragons in the sea. Weedy Seadragons *Phyllopteryx taeniolatus* are endemic to Australia and, like their close relative the Leafy Seadragon, they live in southern waters. In NSW, we only get the Weedies,

which inhabit our coast from the Victorian border to Port Stephens.

For many years, these shy, beautiful creatures have lived amongst the kelp in places like Eden, Jervis Bay and Sydney. With their weird behaviour, strange appearance and topsy-turvy lifestyle, they have become a favourite of divers and nature lovers. But our Weedies are in trouble. Divers are seeing less of them, in fewer places, and no-one quite knows why.

Scientists, divers and conservation groups, including NPA, have recently come together to try to understand and conserve our Weedy Seadragon populations in NSW. Our biggest

problem is data – we just don't know the current status of the many local populations and we don't understand which threats, or combination of threats, are the cause of the decline. To make matters worse, Weedy data are difficult and expensive to collect. Weedies live below snorkel depth in NSW and a single SCUBA dive can only cover a couple of hundred metres of habitat. In these times of cut budgets and changing priorities, citizen scientist divers provide the only practical solution to the data problem.

To really understand Weedy populations, we also need more than counts. We need to know depths, habitat



and exact locations using GPS. We need to be able to identify individual animals to avoid double counting and to track movements. And we need to know the connectivity between local populations, in order to understand the genetic diversity and health of the species. So our citizen science divers need to be highly trained and well equipped.

The Dragons of NSW Citizen Science Program plans to tackle these challenges. The Program has recently completed a pilot in the Sydney area, which identified a total of 30 individual animals. We have successfully collected Weedy numbers, locations, photographs and genetic samples from several sites. Photo-matching software has been used to identify individual animals from their flank spot patterns, avoiding the need to physically tag

animals. DNA analysis has returned strong banding results, with more work required to amplify genetic data and analyse population connectivity.

We have also collected some worrying data. Many diver-hours have been spent searching at historically populated sites including Dragon Alley off Barrenjoey Headland and the Bowen Island nursery in Jervis Bay. In these sites, habitat and food supply were found to be suitable, yet no Weedies could be found. A zero count is still data and, as depressing as it is, it reinforces the argument that we need to do more to conserve the species.

Our next stage is to properly resource the Program, so it can be extended to more sites over time. We will be establishing a database of populations, photographs and genetic

data over several years, and training more divers in more locations.

To achieve this, however, we need funding, so we'll be spending time developing partnerships and writing funding proposals.

As lovable as they are, Toothless, Mushu and Norbert aren't real. The Weedy Seadragons of NSW are very real and they face very real threats. The Weedy Seadragons of NSW Program is being developed to make sure that our dragons of the future are not relegated to picture books and movies like their animated cousins.

Dragons of NSW Partners

University of Technology Sydney, Underwater Research Group, Sydney Institute of Marine Science, AMCS and NPA NSW.



Weedy Seadragon **Photo:** John Turnbull