

The Dragon's Lair...

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National Dragon Search Project
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Rapid Bay Seadragons future still murky

One of South Australia's most important jetty dive sites for watching leafy seadragons may be under threat from demolition. Dive groups and 'dragon-lovers' fear that Transport SA may demolish the end of the Rapid Bay Jetty* destroying the marine life and possibly impacting on the seadragon colony there.

Possible changes to the jetty range from total removal of the end section - including pylons, to removal of upper decking. Divers are worried about the removal of the end 'T' section of the jetty. This is where the seadragons are usually seen. The least extreme option of removing planking, which shades the pylons, may change light conditions, resulting in permanent loss of some of the shade-tolerant marine life, including the dragons apparent feeding habitat.



Rapid Bay Jetty. Photo: Jeremy Gramp.

A significant number of sightings (23.1% of all dive sightings) from the Dragon Search records, are from Rapid Bay Jetty. The seadragon colony at the Rapid Bay Jetty have featured in international dive and wildlife publications including BBC Wildlife, and the site is known nationally and around the world as one of the 'spots' to dive with dragons. Most other dragon dive sites require boat access. Seadragons are protected in South Australia under the Fisheries Act 1982, and recently Tourism SA has been promoting the leafy seadragon in its international literature as a focus for marine tourism.

The Minister for Transport has stated to the SA Recreational Fishing Advisory Council that options for the repair of the areas of the jetty, such as the dolphin decking (the end 'T' section) are marginally cheaper than demolition. However the Minister adds that irrespective of cost of repair, consideration has also to be given to the costs of maintenance. The jetty itself is no longer used for commercial purposes and is classed as a recreational jetty. Funding which was made available for the upgrade of recreational jetties is only available on the condition that local councils assume responsibility for on-going maintenance. An unnamed consortium has apparently expressed interest in the jetty to the Minister's office for an as yet unclarified proposal. There was rumour that a developer had expressed interest to use the jetty for fish farming activities.

The problem would appear to be perceived risk for any future lessees of the jetty. Also the local District Council of Yankalilla is understandably reticent to take control of the structure, with associated long-term maintenance expenses.

Concerned divers and others may wish to contact the Minister for Transport The Honourable Diana Laidlaw at Parliament House, North Terrace, Adelaide 5000, phone (08) 8303 0940, or the District Council of Yankalilla on phone (08) 8558 2048 with any concerns over this proposal.

*Whilst it is not generally Dragon Search policy to release site specific information, it is well known within the diving community and the general community as a whole that seadragons occur at Rapid Bay Jetty. Extensive recent media coverage - both electronic and print - has emphasised this fact. Dragon Search feels it is appropriate to inform the community of conservation issues relating to seadragon sites.

Tony Flaherty, MCCN & Dragon Search (SA)

Seadragon deaths still a mystery

The Fisheries & Aquaculture section of the Department of Primary Industries & Resources SA and Veterinary Pathology Services have completed pathology tests on one of two beach-washed seadragons found by Dragon Search participants during the pilchard die offs. Large numbers of weedy seadragons washed up along South Australian beaches late last year associated with the beach-wash of dead pilchards.

Pathologists tested gill and liver samples from a weedy seadragon found freshly dead at Nora Creina in the south-east of South Australia during the pilchard die offs in December last year. The second freshly dead seadragon reported to Dragon Search from the pilchard die off period at Streaky Bay is currently being tested.

The Nora Creina animal was in good condition with moderate fat stores in the abdomen and a large cluster of eggs was present. Gills were congested with some mucus on the surface. Numerous protozoan *Thrichodina* gill parasites were present, (as well as possibly some helminth worms). The pathologist mentions that *Thrichodina* are relatively common in water and can be present in gills without serious consequences. However they can multiply on animals under stress and can contribute to gill damage with secondary bacterial infection occurring.

Most *Thrichodina*, are found as commensal parasites on aquatic invertebrates, fish, and amphibians. These organisms are characterised by the presence of “teeth” that are used to attach the organism to its “host.” That gives them a characteristic (and beautiful) appearance. If you want to view images of these sorts of parasites, visit the image gallery of the parasites at the University of Ohio website <www.biosci.ohio-state.edu/~parasite/trichodina.html>. For information on fish and other parasites visit the University of Missouri College of Veterinary Medicine website <web.missouri.edu/~vmicrorc/Byhost/Fish.htm>.

As mentioned, presently there are no pathology reports for the other specimen from Streaky Bay. From the results so far any link to a virus was undetermined. Whether there is any correlation with stress related to breeding, or brooding animals moving closer in shore and thus being more susceptible to storm events will need more examination of national trends from the Dragon Search database. Dragon Search would like to take this opportunity to thank all the people that reported and donated beach-washed seadragon specimens.

Tony Flaherty, MCCN & Dragon Search (SA)

Field observations on an egg-bearing male weedy seadragon

On 2 January 1999 at Noarlunga Tyre Reef, South Australia we came upon a weedy seadragon as we descended the anchor line on this idyllic day. I initially suspected he had been drawn by curiosity to the anchor's resting place on a sandy glade surrounded by tyres. This seemed more likely than chance alone as an explanation, considering that he was the only seadragon the three of us saw throughout this dive encompassing a fair area of tyre reef (and I can recall numerous other boat dives where the highlight has been an unusual or uncommon fish presenting itself for inspection to the first diver down the anchor line, but being thereafter scarce or absent, or at the least more difficult to approach, but please read on!)

Except when converged upon by two or more divers from differing angles (two of us had cameras) this egg-bearing male seemed content to stay put over this small patch of sand, so much so that he was I believe there throughout our approximate 40 minute dive. Certainly he was there on each of the 3 or 4 occasions that I passed back across this point during the dive (including one visit where I lugged a virtually new and heavy anchor found stuck in a nearby tyre complex back to our anchor chain for salvage purposes, with an attendant storm of suspended sand and detritus), and he was still there as we made our final ascent. Another alarming incident he weathered occurred just as I was about to ascend, when a diver from another group accidentally dropped his weight-belt while seated on the side of the boat such that it landed with a thud on the sand only about 2 metres from me and the seadragon.

In all I spent at least 10 minutes photographing and observing this seadragon. Throughout my observations

he displayed unusual behaviour that I don't recall having seen before. From his 'resting' pose 10 or 20cm above the sand where he would be lazily holding station in a more upright position, he would fairly quickly (as far as seadragons go!) and deliberately descend the short distance to the sand and lie on the bottom stretched out almost straight, sometimes prone but more often tilted to either side. He would remain thus for periods of a minute or more motionless apart from occasional puffs of sand where water expelled from his mouth disturbed the bottom.



Weedy seadragon lying on the bottom. Photo: David Muirhead, MLSSA

His behaviour was definitely not that of a sick or injured animal. Although I could not be sure, I thought that at least some of his eggs appeared empty or in a state of decay, so I at first wondered, rather fancifully perhaps, if he was trying to encourage one or other invertebrate scavenger species hidden in the sand to eat his empty egg cases and thus rid him of this burden, or even (but there was minimal current and hence little opportunity for shearing force or friction) physically wear them down or dislodge them. I have not heard or read of the fate of hatched seadragon egg cases in those well-published cases where wild-caught captive egg-bearing males have given birth in aquaria - do the empty egg cases have a programmed automatic 'release' mechanism (eg. enzymatic bacterial lysis in the hours or days after birth, or is the male seadragon required to perform some instinctive behaviour to achieve this goal?)

But although I believe neither transfer of the eggs from the female to male nor fertilisation by the male have been witnessed, I increasingly suspect that, despite the absence of a female to suggest recent egg transfer, the behaviour described above related to egg fertilisation. The antic described would ensure that the eggs had optimal exposure to spermatozoa released into the water, both by choice of slack tide with minimal dispersion by current, sheltered site surrounded by tyre complexes further minimising current, and proximity to flat sandy bottom allowing the seadragon to bath the eggs on his tail in a dense layer of sperm-containing water. If he had already released spermatozoa into the water this would also explain his reluctance to leave the site despite major disturbance (which I now regret!) by divers, anchors and alike. Whilst I am to some extent annoyed that I did not check this seadragon's eggs more closely to determine if my vague impression that some were empty was correct, I did not however wish to

interfere with his ritualistic behaviour by so doing. Closer scanning of my numerous photographs of this fish may yet clarify this.

A third but, in my view, less likely hypothesis to explain the observed behaviour would be that he was in some way encouraging the eggs to hatch. I assume that such cryptic creatures would prefer algal cover for this critical activity, rather than the relatively desert-like, exposed site described, and despite excellent visibility and good lighting (by daylight approximately 11am, augmented by my Strobe's powerful pilot light) I saw no hatchlings.

All in all this was an intriguing experience and I am delighted to have the forum in *The Dragon's Lair* to invite more knowledgeable readers to provide further comment.

David Muirhead, Marine Life Society of South Australia

Dragon Search website



The National Dragon Search website is soon to be launched. Anyone who has ever wanted more information about Dragon Search or seadragons in general will find the website a most useful resource. Seadragon Sighting Forms can be

downloaded in electronic format, along with all of the past issues of *The Dragon's Lair*, a photo gallery of leafy and weedy seadragon images, detailed information about seadragons and much more. The Dragon Search website address is <www.dragonsearch.asn.au>. It is expected the site will be up and running by mid July. Dragon Search would like to thank 'the.net enterprises' for hosting the Dragon Search website. the.net can be contacted on ph: (08) 8410 5443, or via their website <www.tne.net.au/tne1999/index.html>.

Funding confirmed for further ecological study of leafy seadragons

The next phase of scientific research into the ecology of leafy seadragons has been confirmed with the announcement of a Coast and Clean Seas grant to Dr Rod Connolly (Griffith University) and Dr John Keesing (South Australian Research & Development Institute). The scientific aim of this two-year program is to measure movement of individual seadragons. It will expand the previous study of movement funded by the South Australian Wildlife Conservation Fund, by tracking movement of a greater number of seadragons and doing so at different times of year. Many of the interesting biological and ecological questions that arise depend on knowing how much dispersal of seadragons there is between different locations. The results of this study are to be incorporated into a management plan for selected areas inhabited by leafy seadragons, with the overall effect of ensuring their protection.

Dr Rod Connolly, Griffith University

NSW Update

New South Wales has a new Project Officer for 1999. Craig Woodfield will be building on the excellent work done last year by Rebecca Raap to expand the project in new directions. Dragon Search NSW is now operating three days a week thanks to an increased Coastcare grant for 1999/2000. One of the initiatives we will be encouraging in the next 12 months is mapping of several known weedy seadragon habitats in NSW, as well as more detailed surveys of their inhabitants. Dragon Search will be assisted by several Sydney based dive clubs in this project, who are very keen to get involved in seadragon conservation. We will also be supporting Angela Kork, a marine biology Masters student at the University of New South Wales. Angela hopes to develop methods for identifying individual weedy seadragons and thus track their movement and habits. Dragon Search is also getting involved in Syngnathid conservation in general, by investigating the Seahorse trade and encouraging Seahorse friendly activities in Sydney harbour.

Craig Woodfield, Dragon Search (NSW)

Tasmanian Update

Dragon Search Tasmania has been cruising along since last year. We have received more than 150 brochures from participants around Tasmania. I have presented to various groups including dive clubs, community groups, schools and colleges. I have also managed to involve the ABC Stateline program in a comprehensive story than ran for about 12 minutes. ABC radio has also broadcast several interviews. The weak link in the survey so far is a lack of feed back from commercial fishers and beachcombers.

Apollo Australia donated a BCD, which was raffled using the mailing list of survey participants. The winner was Jim Morphett of Pillinger Drive, Ferntree, Tasmania. Our thanks to Apollo Australia for their generosity and support of the program. Runners-up were Christopher Stopp (2 dives at Eaglehawk Dive Centre) and Rob Wallis (5 airfills from Eaglehawk Dive Centre).

The Tasmanian Marine Naturalists have received some funding for my position that will at least allow for data entries when the database is finalised. My funding this year is rather tight and I am only really handling the correspondence and sighting form mail-outs.

Eaglehawk Dive Centre has developed a study area in Waterfall Bay and has started a regular monitoring program at the site. The hope is to capture some unusual behaviour on video that may help to understand the natural life of the weedy seadragon.

The Wet Lab at Eaglehawk Dive Centre is nearing completion and this will bear the name Tasmanian Marine Naturalist Association Wet Lab. Hopefully this will be the stimuli for more field trips in the area.

A recent email from Craig Woodfield - Dragon Search (NSW) Coordinator - outlined his attempt to get Burke's Backyard to run a story on seadragons. They (Burke's

Backyard) are only interested in the captive breeding and export of our dragon and were not interested in putting any conservation slant on it. I was concerned that Burke's Backyard was being a bit one sided. I forwarded Craig's email to Peter McGlone from the Threatened Species Network in Tasmania. Following Peter's advice Craig was approaching Ascidian Aquarium Systems who have had a policy of responsible collection and export of seadragons. Roger Wilson from Asidian Aquarium Systems passed away recently. It is hoped that his cautious attitude on the export of Syngnathidae is continued in the future.

I believe that we should develop a national policy on the export of dragons for future dealings with any media outlets. I also believe that we should put more pressure on government to place a moratorium on future collection and export of both species of seadragons.

Gary Myors, Dragon Search (Tas.)

WA Update

Dragon Search in WA has been well supported by the media this year. This spreading of the word has combined with the good fortune of having a full colour glossy Dragon Search brochure in WA (courtesy of Fisheries WA) to produce good results in the number of reports. We are currently sitting on about 300 sightings in WA. This includes about 40 historical records from the Museum of WA and a couple of syngnathid researchers. WA's second year of funding has been approved too, under the NHT Fishcare Program. All great news.

There was some consternation in Perth recently when a local underwater videographer released footage of weedy seadragons only metres from the imminent dumping of rock for an artificial surfing reef substrate. A commercial TV station ran the story, which was good inasmuch as it provided the marine conservation lobby the opportunity to comment on the dangers of inadequate planning around such activities. Underwater World Hillarys (a Dragon Search partner organisation in WA) tried to remove the animals to a safe area while the work took place, but were unable to locate the animals before dumping began. It will be interesting to monitor future sightings (or otherwise) in this area.

Dennis Beros, Dragon Search (WA)

Electronic *The Dragon's Lair*

The Dragon's Lair is now available in an electronic Adobe Acrobat (.pdf) format. Those readers that have access to email now have the opportunity to receive future newsletters either in addition to or as a replacement for the current hard copy you receive. The obvious benefit is that the electronic newsletter will be in colour. If you are interested in receiving *The Dragon's Lair* electronically please email Jeremy Gramp, Dragon Search (SA) <tsnsa@ozemail.com.au> to request an electronic copy. Please also state whether or not you would still like to receive the hard copy in the post.

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Weedy Yowie

Cadbury Australia has recently released a new range of 'Yowies', one of which features a weedy seadragon. A Yowie is a Cadbury product that consists of a chocolate egg that contains a small toy. A few years ago Cadbury and the World Wide Fund for Nature (WWF) struck up a relationship. Dragon Search (SA) used their close relationship with WWF to approach Cadbury with the idea of including a seadragon in the Yowie range. As is evident by the photo below this approach was successful and a weedy seadragon toy was designed and produced.



National Threatened Species Day '99

'The Leafy Seadragon - the Land and Sea Connection'

Beach Lovers and Catchment Carers Wanted

National Threatened Species Day is held 7 September each year and marks the day the last Tasmanian Tiger died in captivity in the Hobart Zoo. The day is used to highlight the plight of Australia's threatened species and to encourage community to become involved in recovery actions in their local area. Typically the National Threatened Species Day activities are a mix of media and on-ground events.

The theme for National Threatened Species Day 1999 in South Australia is 'The Leafy Seadragon - the Land and Sea Connection'. There is increasing concern about the future of seadragons, which are threatened by both habitat destruction and collection for the aquarium fish trade. The leafy seadragon relies on seagrass meadows and algal beds which are under threat off the coast of South Australia. The leafy seadragon's habitat is largely disappearing as a result of decreased water quality, primarily due to land-based pollution and sediment run-off. The direct impacts of some fishing operations are also a potential threat.

Groups such as Dragon Search (SA), Our Patch and the Leafy Seadragon Friendly Catchment Project are already highlighting the importance of catchment care to the seadragon. The Threatened Species Network (TSN) would like to re-emphasise this important connection as the main theme for National Threatened Species Day 1999, and would like to encourage members of the community to become involved in activities - throughout the month of September - associated with National Threatened Species Day.

The TSN (SA) is producing a booklet which contains a South Australian calendar of events/activities which involve the care of South Australia's waterways, catchments or marine and coastal environment. The booklet will also contain contact details for key organisations and a list of actions that community members can take to help threatened species.

If you would like to receive a copy of the booklet, or would like to attend a free public talk 'Into the Dragon's Lair', at 7pm Tuesday 7 September at The Armoury, SA Museum, please call the TSN (SA) on ph: (08) 8223 5155.



Leafy seadragon. Photo: Adrian Brown.

Reef Watch & National Science Week '99

As part of National Science Week in May, Reef Watch - the temperate reef community monitoring program - held an event encouraging everyone to 'come and take a dive with Reef Watch'

The event was held on 1 May at Port Noarlunga Reef and was publicised through dive shops, clubs, the internet and promotional material produced by the ABC. The idea of the day was for people not familiar with Reef Watch to come and take part in a survey dive and learn about the monitoring process.

The day began with a general information session about Reef Watch's aims and provided a demonstration of kit usage and monitoring methodologies. Those new to the monitoring program were 'matched up' with Reef Watch divers, who were eager to teach others the monitoring process.

Divers and a group of snorkellers entered the water, with each new participant carrying a fish and a benthic identification chart, with a survey form attached, to help them to recognise marine life, whilst they were assisted in completing a 'mock' survey.

Those new to the Reef Watch program were amazed by the ease of the methods used to survey the reef. In addition, they were astounded by their new found ability to identify marine life with the assistance of the identification charts and the knowledge shared by Reef Watch divers.

The day demonstrated the increasing interest and support the program is generating. With those new to

the Reef Watch program eager to attend future training sessions, and with current members keen to host another event, the day can only be declared a success.

Anyone interested in taking part in the Reef Watch (SA) program or would like more information, please contact the Conservation Council of SA on (08) 8223 5155.

The Reef Watch program has now been extended to Victoria. Initial funding for the project was granted by Coastcare. The project is being coordinated by Tim Allen from the Marine & Coastal Community Network. If you would like more information about Reef Watch (Victoria) please contact Tim on (03) 9650 4846.

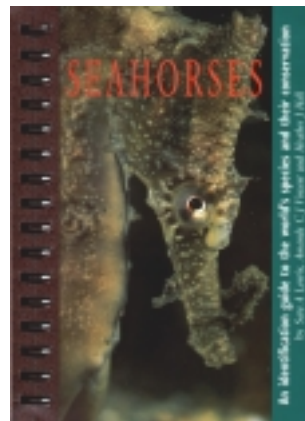
Sheralee Joynes, Reef Watch (SA)

An excellent guide to horsing around

Since the last edition of *The Dragon's Lair* a new book has been released by Project Seahorse, entitled *Seahorses: an Identification Guide to the World's Species and Their Conservation*. Project Seahorse is an international team of biologists and social workers committed to conserving and managing seahorses, their relatives and their habitats while respecting human needs. Proceeds from the sale of the book will assist the ongoing work of Project Seahorse throughout the world. A review of the book is outlined below.

Seahorses: an Identification Guide to the World's Species and Their Conservation.

Sara A Lourie, Amanda CJ Vincent and Heather J Hall.



This book serves not only as a well presented guide to these unique fishes, but is also a readable text on their fascinating biology and the threats they face and current efforts to conserve them for the future.

It is the only comprehensive guide to seahorse species worldwide. It includes good information and identification of species

known from Australia. The clear plain English used makes it a useful text for researchers, museums, conservationists, trade and customs officials, fishermen, aquarists and those with a casual interest in these fascinating fish. The 214 pages are superbly illustrated with 120 colour photos, 37 b/w illustrations and 37 maps.

Up front is a good introduction to behaviour and ecology, distribution and habitats, reproduction, global trade, conservation issues, taxonomy and classification. It also has explanations of IUCN and CITES, national controls and legislation relating to these fish.

The guide to seahorse species is well presented with good known distribution maps. It has line illustrations

which serve as a guide specimens as well as extensive range of colour plates of both live and dead fish, useful for identifying beach-washed or trade specimens. Having been flummoxed by the technical keys in many fish books, the pictorial key offered is relatively painless for the taxonomically challenged.

Also included is a useful overview of seahorse relatives including pipefish, seadragons, seamoths, ghost pipefish, trumpet fish, flutemouths and shrimpfishes. In addition there are a range of survey forms on biology, trade and medicinal use.

Worldwide, seahorse numbers are declining, yet until this publication, there has not even been a clear indication of even how many species exist. This book will serve as an inspiration to those dedicated to conserving these distinctive yet mysterious fish and the marine environment.

Retailing at GB 20 Pounds, the Australian price works out to around \$50. The book can be ordered over the internet via English distributors <www.nhbs.com>. The SA Marine and Coastal Community Network Coordinator Tony Flaherty has some copies in stock, another bulk order can be organised if there is sufficient interest. Tony can be contacted on ph: (08) 8302 6568.

Earth Alive - National Biodiversity Month, September 1999

The ongoing decline of Australia's species and ecosystems is probably our biggest environmental problem, but few people even know what biodiversity means. Help us turn this around and promote what your community is doing to conserve our rich natural heritage. For a National Biodiversity Month information kit, that includes an order form for free promotional and educational materials, contact the Community Biodiversity Network on ph: (02) 9380 7629, email <cbn@wr.com.au> or at the CBN website at www.cbn.org.au

South Australia's Cuttlefish Capital

Whyalla is proclaiming itself the Cuttlefish Capital of the World, going international with a web site devoted to Whyalla's Giant Cuttlefish (*Sepia apama*) spawning. Each year, between early May and mid August, hundreds of thousands of Cuttlefish aggregate to mate and spawn and attach their eggs on the few rocky reefs in the area. The spawning aggregation has long been an attraction for divers. Now it is being flagged as one of Australia's prime marine tourism attractions. So far this season, as well as local and Adelaide divers, the site has attracted marine biologists from Canada and USA, and a documentary crew from New South Wales.

The first cuttlefish arrived in late April and the spectacular spawning displays are well under way. The commercial fishing of the spawning aggregations drastically increased in 1997 and 1998. Dr Mark Norman of the University of Melbourne and the Museum of Victoria, who had undertaken research surveys in the region, expressed alarm at the decline in and the increased fishing pressures and serious concerns, that if fishing continued, collapse of this stock was imminent (see Marine & Coastal Community Network (SA) *Regional Ripples* June 98).

Two years of lobbying by local dive club, conservationists and interstate researchers persuaded the state government to close the local cuttlefish spawning grounds over two seasons (between March and September 1999 and 2000) for further research to be conducted.

The Whyalla Sports Divers' Club continue to encourage the Government to establish a substantial area as a Marine Sanctuary to ensure the conservation of the cuttlefish and the myriad of marine life that rely on them for food.

For more information visit the web site at <www.cuttlefishcapital.com.au>.

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