

Diversity To Flourish In Scotland?

Blue-rayed limpets on kelp at Cuan Sound

Calum Duncan is in reflective mood as he remembers past adventures in New Zealand and the lessons his experiences there might have for Scotland and a more diverse marine environment ...

PAIRS OF YELLOW antennae twitched from the fastness of rock fissures while blue cod hovered around trying to nibble the skin between mask and hood, blue cod that is. Many years ago I spent one spring as a dive research assistant at the Cape Rodney to Okakari Point Marine Reserve, north of Auckland, New Zealand. Better known as Leigh Marine Reserve, it was set up by Bill Ballantine to enable the University of Auckland marine lab at Leigh to study the local marine ecology in its natural state once all human impacts had been removed.

Increasing spiny lobster populations were a fortunate by product of this experiment in what is often now dubbed the world's first no-take marine reserve. Local fishermen, initially sceptical, soon reaped the benefits of the closure by 'fishing the line' for lobster overspilling from the reserve. Studies of marine reserves worldwide, places where no damaging human activity can take place, show that the biomass, the volume of life, within reserves increases on average fourfold and diversity of life by almost a quarter. The results are more impressive for temperate reserves where biomass increases fivefold. Species previously fished increase in number, such as the spiny lobster at Leigh, and those preyed on by these commercial species reduce in number, such as urchins. At Leigh, kelp forests flourished where once urchin-grazed barrens dominated.

Crucial crustaceans

It is a rare treat to see a spiny lobster (*Palinurus elephas*), also known as crayfish or crawfish when diving in

Scotland. These rare animals bring our reefs vividly alive and I would urge all divers to take only photographs if they are encountered. In 2009, we have been encouraging all divers to send us their sightings of this colourful but threatened crustacean. The Firth of Lorn is another good area for sighting crayfish, although this species has not been the main focus of recent Seasearch trips.

Following up on a survey I organised in April 2005, Owen Paisley Seasearch West Scotland co-ordinator organised further trips in May 2007 and April 2009, and myself another trip in September 2009 to look for and measure populations of northern sea fan (*Swiftia pallida*) and the rare sea fan anemone (*Amphianthus dhornii*) that lives on them in the Firth of Lorn European Marine Special Area of Conservation (SAC). Between the four surveys, sea fans were measured by volunteer Seasearch divers at 8 sites throughout the Firth but the rare sea fan anemones were only recorded from three - west of Insh Island, a reef east of A'Chuli and another reef off southeast Lunga Island. All this information will help toward managing the SAC. You can read more at www.seasearch.org.uk.

Biodiversity hotspot

On land and beneath the waves, this corner of Scotland is a real biodiversity hotspot. The Firth of Lorn SAC itself is designated for its biologically rich rocky reefs, a definition that also encompasses boulders, supporting soft corals, including red sea fingers (*Alcyonium glomeratum*), northern sea fans, sea-fan anemones, 'prawn-cracker' sponges

(*Axinella infundibuliformes* - a mouthful of a name!) and profusions of oaten-pipe hydroids on the more tide-swept sites. This diversity was abundant during our September 2009 trip on David Ainsley's *Porpoise II*.

On the Friday, following a tip-off to Owen from local Seasearch diver Trevor Davies, who had been there the previous weekend, our keen Seasearchers from as far afield as Dorset, Norfolk, Inverness and Aberdeen, spread out over a reef east of A'Chuli in the Garvellachs. Among those that headed along the western face toward the more tideswept southerly point, William and I surveyed the denser growth of sea fans found here including one colony my buddy spotted covered in 13 sea fan anemones. George Brown topped that, finding another with 18. Thanks for the tip Trevor!

Northern and diverse

Our second dive was an offshore pinnacle north of Jeannie's reef which was dominated below the kelp zone by dead men's fingers (*Alcyonium digitatum*), but no sea fans. However another northern speciality, the white cluster anemone (*Parazoanthus anguicomus*) was present and one buddy pair even spotted a crayfish. These elusive animals are currently reprieved thanks to a ban on multi-monofilament tangle-nets on the west coast, but this may only be temporary.

After air fills from Mike Tye's Oban Divers, a good feed at Tigh an Truish by the Atlantic Bridge and a restful night at Seabank cottage, we headed off through rain and swell to the lee of Eilean Dubh Beag. Mermaid's reef was well worth the

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trip with sea fans in abundance, although no sea fan anemones. Our second dive of the day was a scenic wall running north from Creagach Island in outer Loch Melfort, although outside the SAC boundary, which descended in rounded ledges to about 25m and supported the communities of seasquirt and, shallower, sugar kelp forest more associated with sheltered sea loch sites.

By the morning of our third and final day, the wind had not abated so we didn't venture too far, diving an unusual wall in Seil Sound. Northerly faces of the wall were covered in dense growths of red seasquirts (*Ascidia mentula*), themselves grown over with fluted (*Asciidiella aspersa*) and other seasquirts, making the most of the tide ebbing south from Loch Linnhe under the Atlantic Bridge. In contrast southerly faces had little growth, presumably because the flood tide does not flow as fiercely heading north.

On the slack tide, David had arguably saved the best until last, Cuan Sound. A curving reef wall and giant boulders were carpeted with a dense growth of oaten-pipe hydroids (*Tubularia* species), packed close with elephant-hide sponge (*Pachymatisma johnstonia*) and sandaled anemones (*Actinothoe sphyrodeta*) in their 'fried-egg' colour morph, all testimony to the tides that rip through here on flood and ebb.

On the same weekend, North east Scotland co-ordinator Chris Rickard organised a trip to the far north east which you can read about in future issues, boosting the Seasearch survey effort for the year. Many thanks to all those keen divers who have sent in their Seasearch records over 2009 from Luce Bay to the Firth of Lorn, Lamblash Bay to Orkney.

Beyond the 'jewels in the crown'

Whilst it is vital that we find out more about the distribution of biodiversity 'jewels' throughout Scotland such as northern sea fans, sea fan anemones and crayfish,

and for that matter maerl, flameshells, seagrass and many others, and make sure they are properly protected, there is a bigger picture. We simply do not know what pristine seas look like and, whilst crayfish were sighted in the Firth of Lorn, the memory of fissures crammed with them in New Zealand is now distant.

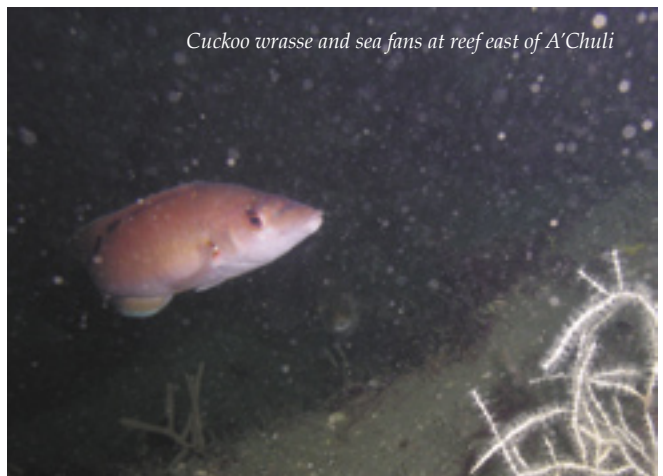
The forthcoming Marine (Scotland) Bill includes a power to set up Marine Protected Areas for demonstration & research purposes. I hope that this can be used to set up closed areas to act as scientific controls to determine what the sea should look like in its natural state and contribute to the recovery of our seas. The nature conservation MPA power should also be used to set up a network of marine protected areas, from multiple-use sites with highly protected zones to highly protected sites. You can add your voice to our call for such a network by logging on to www.marinereservesnow.org or suggest where you think needs protecting at www.yourseasyourvoice.com. Until then, we must also push for our existing European marine SACs to be more robustly protected. Write to your MSP asking that the ban on monofilament tangle nets remains and for all fisheries to be subject to Appropriate Assessment in marine SACs. By getting Scotland's seas on the road to recovery, everyone benefits, from spiny lobster and sea fan to fisherman and wildlife-tour operator.

FURTHER INFORMATION

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Edible crab at Cuan Sound



Cuckoo wrasse and sea fans at reef east of A'Chuli



Sandalled anemones and reef life at Cuan Sound



Long-clawed squat lobster at offshore pinnacle

images on this page and on Page 31 courtesy Calum Duncan/MCS