

Helmet shells

If you should walk along the beach north of Cape Vidal in the iSimangaliso Wetland Park, keep a look out for helmet shells - not just one or two but heaps of them. They are likely to be a treasured relic of the crew of the Italian vessel the Tamarva, which was "trapped" in South African national waters when Mussolini joined Hitler and declared war on the Allies. Before the South Africans could apprehend the now enemy ship, they decided to run ashore and dig their huge cargo of helmet shells into the beach in the hope of recovery after the war.

Why helmet shells? Indeed, they belong to the family Cassidae and are the source material for manufacture of cameos, those exquisitely carved brooches that adorn the rich. Two species occur, *Cassia cornuta* and *Cypraecassis rufa* - both now threatened. Helmet shells are predators of sea urchins, thus very important from an ecological aspect.

The crew were captured and jailed and today only the Tamarva's engine block remains in the surf zone and has become a site where kob aggregate.

~ Rudy van der Elst



Cypraecassis rufa
(Red Helmet Shell)



Cassia cornuta
(Horned Helmet Shell)

International Coastal Cleanup

Marine debris is one of the major problems facing our seas and coastal areas. One of the best ways to remove waste from the sea is by holding coastal cleanups. This also raises awareness as to the threats posed by littering.

The International Coastal Cleanup will take place on
15 SEPTEMBER 2012.

Contact Wayne Munger at Ezemvelo KZN Wildlife for more information as to how you can get involved.

Email: mungerw@kznwildlife.com



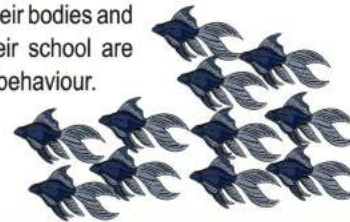
2012 BEACH CLEANUP
CELEBRATING 30 YEARS OF TURTLE MONITORING

Ever Wondered?

Almost all species of fish travel in schools. But have you ever wondered why they do this, or how they're able to achieve such uniform motion?

The reasons are not completely understood, but it is generally believed that there is safety in numbers - a school consisting of thousands of small fish moving as one may look like a larger fish, intimidating some predator. Or the formless mass may simply confuse predators, making it difficult to single out individuals. Other theories relate to the fact that shoaling makes it easier for all members to find food by working as a team. It also keeps both sexes together ensuring that everyone finds a mate.

Visual cues play a big part in how fish are able to swim so seamlessly in unison. Fishes' eyes are located on the sides of their heads and are especially sensitive to lateral movement. Thus fish easily see what other members of their school are doing and respond accordingly. This is why some schools lose their compact structure at night when visibility is reduced. Other cues that fish use are motion detection - many species have lateral lines (special cells that run down the sides) that are sensitive to movement and displacement of water. Fish are also known to release chemical alarms (called alarm pheromones) that influence the physiology and behaviour of other fish in their school. Fish also have ears located on their bodies and can hear what other fish in their school are doing and respond with identical behaviour.



Contact Us

If you wish to be added to our mailing list or have any comments about *Ulwandle* - please contact

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agriculture
& environmental affairs

Department:
Agriculture
& Environmental Affairs
PROVINCE OF KWAZULU-NATAL



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KwaZulu-Natal's Coastal Management Newsletter

Sewage Recycling - a viable alternative?

Currently, South Africa disposes of unthinkable amounts of waste-containing fresh water into our rivers, estuaries and ultimately the sea, often to the detriment of these vital water resources. South Africa is a water-stressed country and likely to become increasingly so, according to climate change projections. This is further exacerbated by the growing demand for fresh water across all sectors. Under these circumstances, should we not be seriously considering the waste hierarchy: Reduce, Re-use, Recycle, Dispose?

Reducing the volume of wastewater we generate is possible through the use of alternative technologies, both in industry and our everyday life, such as the installation of waterless toilets for domestic sewage. Given the growing amount of sewage to be dealt with, and the continued use of conventional waterborne sewage, wastewater recycling is likely to play a major role in our future water security.

The benefits of recycling wastewater are many. Importantly, we can avoid overloading small river systems with wastewater, which can be just as harmful ecologically as excessive water extraction. We can also avoid loading our rivers and estuaries with fertilizer-like nutrients, which cause eutrophication (dangerously high levels of naturally occurring organic nutrients) resulting in some very undesirable effects, such as fish kills.

However, sewage recycling is a somewhat controversial subject in public discourse, often eliciting a response known as the "ick factor". Logically, most of our drinking water is recycled - considering water is extracted from the same rivers that treated (and sometimes untreated effluent) is discharged into.

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Ecosystem functioning



The KZN Bight

The marine environment along the west coast of South Africa contains a rich soup of nutrients, the building blocks for primary producers like micro-algae and diatoms, which in turn provide an abundant supply of food for the vast biomass of fish and marine organisms making up the next step of the food chain, up to the top predators such as sharks and seals. The source of these nutrients is primarily from the

organic debris that accumulates in the deep, cold oceanic water offshore. Periodically, this water is forced to rise up into the coastal water by a process called upwelling, flooding the environment with nutrients. The KZN marine environment on the east coast of South Africa is very different. It is characterised by nutrient-poor water overlying a narrow shelf, with few fisheries resources. Nevertheless, KZN has a thriving marine ecosystem, and there has been some debate as to where the nutrients that support this life originate. One argument is that small-scale upwellings are evident off the Durban and Richards Bay coasts, which bring deep nutrients to the surface, as occurs on the west coast. Another view is that the numerous rivers flooding into the sea provide terrestrial nutrients to the environment.

A recent multi-disciplinary study carried out by the Oceanographic Research Institute, UKZN departments, the CSIR and the Department of Environmental Affairs, and partially funded by the African Coelacanth Ecosystem Project (ACEP), investigated the relative importance of these two different nutrient sources, while at the same time trying to increase our general understanding of the biodiversity of the shelf between Richards Bay and Durban (the KZN Bight). A research ship was made available to KZN scientists for two seasonal sampling trips. This resulted in an enormous amount of information on currents, nutrients, bacteria, plankton, bottom-living and demersal organisms. In parallel, a number of key estuaries were studied in order to establish the nature of terrestrially-derived nutrients. Using the data gathered a model of the KZN Bight ecosystem was developed, which showed a heavy reliance on seafloor based activity, unlike the water column based ecosystems of the West Coast. Although the food-web across the Bight is heavily influenced by terrestrial nutrient input from the rivers, it was confirmed that upwelling of nutrient-laden offshore water onto the Bight becomes more important to its south and north extremes, where the areas of upwelling sometimes occur. So, along our KZN coast it seems that both terrestrial and oceanic sources of nutrients are important. How these sources are linked through the food chain still needs to be investigated.

~ Sean Fennessy & Larry Oellermann (ORI)

Sardine Run 2012

The elusive silver fish, mixed with other baitfish (primarily red-eye), made their first appearance on the KZN South Coast on 4 June 2012. The shark nets were promptly lifted and as a result bathing was declared banned from Uvongo to Port Edward. There was scattered baitfish, bottlenose dolphin and gannet activity throughout the South Coast for much of the month of June. Water temperatures generally remained a little high (21-22°C) throughout June and July, although there was the odd day when it dropped below the important 20°C barrier, down to 19°C.

The first seine netting of sardines only took place at Hibberdene on 2 July 2012. Several attempted nettings took place at Amanzimtoti and along the Durban Beachfront between the 4th and 11th of July but all were without success. The sardines disappeared off the South Coast but were regularly sighted along the Durban beachfront, where most of 14 successful nettings took place. The last netting of the season was on 30 July and the northern most netting was at Suncoast Beach, Durban. The total beach seine landings for the season was 663 crates (the "currency" used by sardine netters, with 20 dozen sardines in a crate). This is considerably less than last year's 107 nettings of 8425 crates and 263 nettings of 23985 crates in 2010.

The most productive netting was the first one of the season at Hibberdene, with approximately 290 crates landed. These crates were sold for R500-600 each and all the fish were sardines. The other landings comprised a mixture of sardines, red-eye and some mackerel. A significant feature of the sardine component of the catch was the small size of the fish, being well below 20 cm long. It is conceivable that these fish were not migrants from the cooler waters of the Eastern and Western Cape but were fish which have been resident in deeper water on the KZN coast. This can only be confirmed with a detailed examination of the fish.

Sharks nets, which had been removed to avoid mass catches of sharks and dolphins accompanying the sardines, were all reinstated by 26 July. The 2012 Sardine Run was a somewhat disappointing affair for the public who enjoy going to the beaches to see and catch "sardies" in the shallow waters.



Sardine Run excitement

~ Augustina Ganesan (KwaZulu-Natal Sharks Board)

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Drinking recycled water is a fact of life. The only difference between the status quo and eThekweni's proposal to recycle wastewater is that, instead of abstracting waste-containing river water for further treatment, existing wastewater streams will be treated on-site to potable standards.

Although it may be a first for South Africa, Windhoek in Namibia has been doing this for around 42 years without incident, and since 2002 recycled water has been their primary source of drinking water. The fact is that water is the limiting factor when we consider basic human needs, urban expansion, service delivery, development, economic upliftment and ultimately job creation and job sustainability. We simply cannot afford to continue flushing our water resources down the loo.

~ Bianca Morgan (WESSA)

Sewage Spills

The high frequency of pollution in the coastal environment in the Ugu District has been of increasing concern to environmental NGOs and residents alike, with the overflow of raw sewage into watercourses and onto beaches occurring more often than one would like. This is not unique to KZN's South Coast, as ageing infrastructure across the province begins to fail coupled with increased volumes of sewage. These problems are further exacerbated by the fact that there is only limited funding available for sewage infrastructure rehabilitation in KZN.

While there is growing concern that our District Municipalities, the key authorities responsible for wastewater management, are struggling to meet wastewater management demands, water pollution is a cross-cutting problem and a number of authorities have the ability to respond to and help with these episodic events. District and Local Municipalities should be working together with the relevant Provincial Departments to address these concerns and come up with preventative measures.

The role of members of the public in spotting pollution or sewage spills is critical, and we would always encourage people to report incidents in their areas as the first and most critical step towards solving the problem.

~ Carolyn Schwegman & Bianca Morgan (WESSA)



Example of sewage spill