SUSTAINABILITY: HEALTHY SEAS INITIATIVE



Fibre producer Aquafil has teamed up with the European Centre for Nature Conservation and sock manufacturer Star Sock on a mission to rid the seas of ecosystem-destroying 'ghost' fishing nets and recycle them into high-quality finished products.

Nylon from the oceans

It was completely by chance, after taking a detour following the 1997 Transpac sailing race, that Charles Moore discovered the Great Pacific Garbage Patch. Thousands of bottles, toothbrushes, containers, tyres and toys swirled around his yacht in a soup of plastic that took a week to sail through. For every kilogram of plankton – in an area twice the size of France – there is 6kg of plastic, trapped indefinitely in the region by the North Pacific Gyre, a vortex of currents that circulate clockwise around the ocean.

The scale of the problem is immense: globally, we have produced more plastic in the last 10 years than in the whole of the last century, half of which is only used once; 500 billion plastic bags are thrown away each year with the life of each bag a mere 15 minutes; and a 1982 estimate put the daily total of marine debris entering the oceans at 8 million items – a figure that is vastly outdated.

All of this means there are 30,000 pieces of debris in every square kilometre of ocean, 70% of which is plastic and a "significant amount" is discarded fishing nets, according to Heather Koldeway, a marine biologist at the Zoological Society of London. "It's really quite scary," she says. Recent estimates suggest 1% of nets deployed in European waters are 'lost', with the monofilament they are made from taking around 600 years to degrade in sea water. These 'ghost' nets – some of which are so large they could cover 13 jumbo jets – float around in the ocean, catching and killing millions of fish that will never be eaten, as well as tens of thousands of seals, dolphins and sea birds per year – a serious threat to the marine and coastal ecosystems. In only four years, the price of a single Southern Bluefin tuna has doubled to £500,000, reflecting the species' rapid decline and its recent inclusion on the critically endangered list.

Near-infra red rays are used to determine whether recovered fishing nets contain nylon 6.

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This might make grim reading, but a forward-thinking partnership has come together to do something about it. Netherlands-based European Centre for Nature Conservation (ECNC), a not-for-profit environmental group, engaged a group of divers to cut nets from shipwrecks off the Dutch coast. Stunned by the realisation that they would be charged for their disposal as nets are considered industrial waste – "I assumed it would be free as we were doing something good for the environment," says ECNC's executive director, Rob Wolters – they began to look for alternatives.

Around the same time, sock manufacturer Star Sock, which counts sportswear brand New Balance among its clients, had been searching for a more sustainable source of material and had turned to Aquafil for the solution. The Italian fibre producer had begun to produce recycled nylon 6 at its factory in Slovenia, with the end product, Econyl, mainly used for carpets. "It seemed like an ideal solution," says Mr Wolters, and the Healthy Seas Initiative was born. "It was closing the loop – not only removing nets from the sea, which was one problem, but also making it financially viable and sustainable."

Officially launched at the start of October, the first phase of Healthy Seas is focusing on pilot regions, retrieving nets from around the Netherlands, Belgium, Slovenia, Croatia and Spain. Around 20 tons have been recovered off the Dutch coast since April, and have been transported to Slovenia by Norwegian company Nofir to be cleaned, sorted and depolymerised at Aquafil's Ljubljana-based plant. The project has gained support from the EU as well as the United Nations environment programme.

"Forty years ago, when we started producing nylon 6, we were not aware of its ability to be recycled, so we were lucky," says Aquafil's CEO Giulio Bonazzi. "Sustainability should be a way of thinking and being. Every year, over 70 million tonnes of fibres are produced and the textile industry will no longer be able to continue allowing these to finish in landfill at the end of their life."

Net gains

Aquafil's sorting factory uses near-infrared rays to detect the polyamide and determine which nets are usable – only nylon 6 has the ability to be broken down and rebuilt, the rest is sent elsewhere for processing. Aquafil has taught some partners and fisheries to test the nets before they arrive at the plant, to create as little waste as possible. It is a learning curve: when Aquafil began the project in 2011, the first batches of nets from Norway arrived embedded in ice and the process is constantly being refined. "Slovenia has a long history of recycling – it is not by chance that we are here," says Mr Bonazzi. "Households were sorting waste in the early 1990s, long before most of Europe, so it is in their culture."

The nets arrive in Ljubljana cleaned and shredded, and enter the reactors to begin the depolymerisation and then purification process, before being extruded and made into new yarns. The resulting product is a polymer with the same technical and quality characteristics as the original and which can be regenerated an infinite number of times. The company claims about it saves about seven barrels of oil per ton as no virgin caprolactam is used to produce it, with about 80% of the nets turned into Econyl and 20% incinerated and used as energy.





Nets are recovered at fish farms, such as Fonda in Slovenia, with the first batch of Healthy Seas socks due to go on sale in May 2014.

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(Left to right) Aquafil CEO Giulio Bonazzi; ECNC executive director Rob Wolters; marine biologist Heather Koldeway from the Zoological Society of London; and Star Sock founder Eric Roosen.

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The yarn is used by adidas in its swimwear as well as by US brand Koru, and Aquafil is working on a project with Georgia Institute of Technology in Atlanta, US, to help separate elastomeric fibres from nylon 6 which will result in more usable raw material.

When questioned about how sustainable the project is in terms of using divers to collect nets (many of those currently involved are doing so on a voluntary basis), Ms Koldeway says the enthusiastic reaction has been touching. "Divers are very passionate about the oceans because they see it first hand, and they want to get involved. The dive community is very positive because the results of this project are tangible." As the project progresses, the business model dictates that divers will be paid. "The power of the internet is incredible – news is spreading; we are being contacted by divers from all over the world who want to get involved," she adds. The involvement of fish farms, such as Fonda in Slovenia, is also seen as key, as an estimated 450,000 tons of nets are recovered by fish farms each year.

The second phase of Healthy Seas will see the project widened, capturing nets from further afield, and will also include an education programme to inform fishermen about the damage caused to the marine environment by abandoned nets. "Prevention is better than cure," says Mr Wolters, "but there is a lot of pressure on the fisheries industry at the moment."

The partners also plan to open a dialogue with manufacturers of nets, encouraging them to consider the end-of-life and the recycling opportunities. "Net manufacturers need to be part of the discussion – what is the traceability and what are the recycling opportunities? These are questions we don't necessarily have answers to at the moment," says Ms Koldeway. "But the unusual combination of partners is creating a platform for new conversations – bringing together different dialogues that tend to run in parallel but which have the same goal."

The third phase includes petitioning governments to set standards on these materials, as ultimately regulation might be the only way to encourage nets to be made from more sustainable materials and discourage the dumping of nets at the end of their shelf life.

Pulling heart strings

The crux of this project, however, will be whether consumers buy into the story. Although it is hoped that the final cost of Healthy Seas socks will be comparable to regular socks, any additional price will have to be borne by the consumers. Alongside the nylon, Star Socks' Healthy Seas collection will be made from 50% Better Cotton, wishing to appeal to a growing movement of more informed, more environmentally aware customers.

"Normally only 40% of consumers are willing to pay more for a sustainable product but in this case it's even touching the heart of big European retailers, which are willing to charge more," says Star Sock's founder Eric Roosen. "In my 20 years in the business, this is the only sustainable story I have come across where people are willing to pay more."

In fact, German retailer Kaufland is bearing a premium to offer the socks to retailers for half price when they go on sale in May 2014, such is its conviction in the project.

With 640,000 tons of abandoned fishing gear estimated to be in the oceans, the scope for expansion is vast, and the project is seeking involvement from sports and swimwear manufacturers and brands to drive it forward. "There is increased public awareness of the issues, of unsustainable fisheries and the problem of waste," says Ms Koldeway. "There is a change coming."

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