As garbage increasingly chokes the world's waterways and oceans, the need to take action becomes ever-more pressing. To address the issue, brands and materials suppliers are finding, and engaging consumers in, innovative recycling solutions.

A drop in the ocean

We'll call it a new deal: buy any item from United By Blue or a pair of flip-fops from Subs and these two brands will remove half a kilo (or one pound) of waste from waterways and coasts. For the consumer, this translates into a positive action in favour of the environment. For the brand, the transaction helps fund ocean clean-up operations. Simple.

Philadelphia-based United By Blue has organised more than 220 clean-ups since it set up this system in 2010. A million pounds (or 453 tonnes) of trash were removed in 2017. Three staff members are tasked with planning, organising and setting up partnerships with retailers, schools and communities and 10,000 volunteers have participated in the events.

Subs, based in New Zealand and founded in 2016, removed 42 tonnes of debris from beaches and waterways in 2017. It expects to retrieve 200 to 300 tonnes in 2018 and would like to rapidly reach 1,000 tonnes yearly.

The clean-ups organised by both of these companies pick up all waste found on beaches, river banks and in water. The trash is then sorted and sent to corresponding recycling facilities. United By Blue customers have often asked the brand whether it uses recycled plastics salvaged



Redcycle is a project launched in 2015 between Basque sportswear brand Ternua and local fishery OPEGUI to collect discarded fishing nets. These are turned into Econyl and have been introduced in two pant styles as part of the A/W 2018 collection.

Ternua

SCHEWTO©



For the past two years, United By Blue has replaced Black Friday by Blue Friday to encourage individuals to perform DIY clean-ups in their neighbourhoods or local parks instead of going shopping. In 2017, it made 3,000 clean-up kits available. Sold for $5, they contain a pair of gloves, two trash bags (one for recycling and one for the landfill), a quick clean-up how-to guide and a 100% organic cotton #bluemovement bandana.

United By Blue

on beaches in its products. "We don't," says Mike Cangi, its co-founder and brand director. "We've done the math and found that it is neither cost-efficient nor environmentally sound to recycle the plastic bottles we collect into fibre." United By Blue prefers to stick to its simple equation: one product bought, one pound removed. No matter the item, be it a winter jacket or a keychain, they all contribute to the cause. "We want to simplify the life of the consumer," says Mr Cangi, adding that "ocean pollution is an easy concept to understand and a major issue. It also helps to build a tangible connection with consumers."

The founders of Subs, on the other hand, were looking to close the loop and found this to be far from simple. "We spent 18 to 19 months investigating recycling options for ocean plastics that may have been degraded by salt water and exposure to sun," says company co-founder Andrew Lambie. The two founders had experience in the footwear industry and focused their research on making flip-flops from recycled plastics that could themselves be recycled at the end of their life.

Many companies contacted by the Subs team did not want to handle recycled plastic. The young brand did finally find a factory in Taiwan willing to recycle ocean waste into a plastic suitable for flip-flop soles. Like United By Blue, the main purpose of the Subs business is to finance beach and ocean clean-ups. "We pick everything up, and have found that 75% to 80% of beach debris is recyclable," says Mr Lambie. The brand's waste removal operations extend to one kilomitre from the coast, but depending on how long the plastic has been in the ocean, it may or may not be recyclable.

"Our goal is to have a tangible impact on the environment in general and in the oceans specifically," says Mr Cangi at United By Blue. "Selling clothes is our way of scaling up the cleaning process, and we make sure that one does not outpace the other." The company is careful in choosing its materials from the point of view of harm to the environment; its collections are made in organic cotton, recycled polyester, Tencel, modal, wool and bison fibre, and manufactured in the US. "We try to make responsible, durable staple goods that can be worn for years and have a 'clean' end of life," he adds.

Fibre from flotsam

The kilo per kilo, or pound per pound, concept is also being applied upstream, where fibre producers, NGOs and recyclers team up with fisheries, fishermen and divers. The reclaimed ocean plastics and ghost fishing nets are transformed into recycled polyester fibres by Bionic Yarn and Seaqual or into regenerated polyamide by Aquafil.

Seaqual 4U, the newest player in this cause, was launched in 2016 by the Ecoalf Foundation, linked to Spanish eco-minded sportswear brand

The soles of Subs flip-flops are 100% recycled, while the straps are made from virgin plastic, as recycled plastic is not yet strong enough for straps. At the end of their life, they are chopped up again for reuse.

Subs



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Ecoalf. Other partners include Spanish spinners Antex and Vich and textile manufacturer Textil Santanderina. The deal Seaqual proposes is that for each kilo of waste removed from the ocean, one kilo of fibre is produced. Here again, all waste is salvaged, not only plastics. Since 2016, 200 tonnes of marine waste have been removed from the bottom of the Mediterranean Sea, the Ecoalf Foundation says. Of this, 90 tonnes of fishing nets and five million plastic bottles have been recycled so far.

The organisation works with fishermen who collect all the trash they find when out fishing. Each category of reclaimed junk, be it tyres, appliances or plastics, is sent to a corresponding treatment facility. The plastic waste is sorted, cleaned and reprocessed into fibre via mechanical recycling. The current fleet of 400 ships working for Seaqual collects one tonne of trash every day in four regions–in Europe, Asia, North and South America. Seaqual plans to have six platforms operating worldwide so that brands can source the fibre close to where they manufacture. In Europe, in addition to the coasts of Spain, a major river will soon be added to the clean-up network and to the organisation's resources.

Like United By Blue and Subs, Seaqual managing director Michel Chtepa insists that "we need to create an economic model to sustain ocean clean-up schemes. Seaqual is not only about recycling, it is about removing all garbage from waterways. This is important as we want to be a catalyser for change." Of the estimated eight million tonnes of trash in the oceans, only 10% is plastic.

Seaqual's recycled polyester fibre is available in filament form, produced by Antex, or spun yarn, made by Vich Industrial, both based in Spain. The yarn portfolio has recently been expanded to include new intimate blends in spun yarns (Nm 30 to 70) with recycled cotton, Lenzing EcoVero or Tencel. A new Taslan-textured filament yarn has also been developed in 50, 78 and 167 dtex.

Tackling fishing nets

Aquafil is a pioneer in recycling abandoned fishing nets into virgin grade nylon 6, which it has been doing in Slovenia since 2011 when it opened its first Econyl production line. In December 2017, the company went public on the Milan Stock Exchange and was able to raise new funds to further step up the development of Econyl. The company has declared that, within the next six years, it will shift its entire production to recycled nylon, which currently represents 35% of its total volume.

Econyl is obtained via what Aquafil calls a "regeneration" process. "Our difference lies in our Econyl Regeneration System, which produces a high ratio of nylon output compared to waste input. In this unique process, the waste is chemically depolymerised, resulting in a much higher-quality polyamide compared to mechanical recycling. The process allows the waste to return to a raw state, removing all foreign substances and impurities for 100% virgin quality," says CEO, Giulio Bonazzi.



Spanish sportswear brand Ecoalf launched Upcycling the Oceans in 2015 to remove waste from the seas. In Spain it is working with Seaqual 4U partners Antex, Vich and Santanderina, and in Thailand it collaborates with PTT Global Chemical Public.

Ecoalf

In addition to the nylon 6 fishing nets it recycles, Aquafil also gives a new life to used carpets. These are much more challenging to recycle, as they are made from several materials that are glued together and difficult to separate. Extensive research and development has enabled it to develop an innovative recycling process that does not shear the carpets but disassembles them fully. "This allows us to recycle carpet much more easily and in a more cost-efficient way," Mr Bonazzi tells *WSA*.

The Italian group has recently invested $10 million in a new carpet recycling facility located in Phoenix, Arizona, that will have the capacity to collect and treat more than 15 million kilos of carpet per year. "We're not comfortable with the status quo – in this case that less than 5% of carpet waste is recycled," Mr Bonazzi has declared.

Though the greater part of Econyl nylon is recycled from used carpets, Aquafil actively supports ghost fishing net retrieval programmes. The nets not only pollute oceans but also trap animals when left to stray. With Ghost Fishing, an NGO based in The Netherlands, the Italian

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group is a founding member of Healthy Seas, an organisation that recruits volunteer divers to recover abandoned and discarded fishing nets from the coastal areas of Belgium, the Netherlands, Italy, Greece and Croatia. It also works with the Zoological Society of London for NetWorks, an NGO that helps coastal communities in the Philippines and Cameroon collect and sell discarded fishing nets.

In the five-year period from 2013 to 2017, Healthy Seas says 375 tonnes of nets and lost fishing gear were collected by 650 fishing boats and 75 divers. As for NetWorks, its latest count stands at 142 tonnes of fishing nets collected and 1,500 families gaining access to finance since 2012.

It is estimated that eight million tonnes of plastic enter the world's oceans every year and a joint report by United Nations agencies the Food and Agriculture Organization and the UN Environmental Programme indicates that some 640,000 tonnes of fishing nets are left in the oceans each year. The non-exhaustive data mentioned in this article tally up to roughly 1,500 tonnes. A drop in the ocean, certainly, but a drop that counts, as Mike Cangi at United By Blue, puts it: "We realise that removing trash is just a band-aid, but it is better than nothing and it helps educate people."



Skate and surfwear brand Volcom, a Kering company, is one of 160+ brands using Aquafil's Econyl regenerated nylon.

Volcom

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