



Amphibious landing



Ever since Kevin Costner exposed his webbed feet in the film *Waterworld*, shoe manufacturers have stepped up their efforts to produce the perfect shoe for walking on wet land and in the water. Amphibious footwear, to the uninitiated, simply means “shoes that are worn in or around water”, but there are basically two approaches to the subject. One approach to water footwear is to attempt to keep the water out and thus feet dry; the other is to admit wet ‘defeet’ and pump the water out of shoes and boots as quickly and efficiently as possible.

We looked at waterproof footwear a year ago and now in this article will address the other category of footwear considered amphibious. This is more diverse; from surfers and sailboarders to scullers and white river rafters. Here we are not considering how to keep water out of a shoe but accepting the inevitable – that we can’t, so how do we cover the foot for protection, create better traction and aid motion under water. There are numerous approaches to footwear once the wearer has tacitly accepted the fact that it is impossible to keep water out of footwear that is constantly deluged or submersed in it. For example, yachting and boating footwear is required to offer:-

- traction on wet surfaces
- protection from cuts, cold and wetness
- non-marking or damaging to deck surfaces
- quick-drying
- light and comfortable
- buoyant (should it need to float)
- won’t pick-up sand or pebbles in the tread
- won’t corrode in salt water or stain hose and feet

The answer here is a choice between either a silicone impregnated leather/nylon mesh upper in a moccasin style with Littleway stitched unit rubber sole, a canvas vulcanised rubber-soled deck shoe or a more specialised rubber yachting boot with high (over the calf) top-line and non-slip rubber sole. A nylon waterproof cuff is attached to the top of the boot to give maximum protection. The famous sipped sole, introduced by Paul Sperry in 1935 is still a standard on boating shoes. It offers non-slip protection on board and a dirt-free tread on land.

Windsurfers and jet skiers have their own criteria for amphibious footwear to improve performance at all levels of their chosen water sports activity. Two styles of booties are preferred for surfing and sailboarding activities: lightweight nylon or power mesh uppers with synthetic suede apron trim or nylon backed neoprene foam rubber wet sock with either a vulcanised or



Teva's Kayak shoe (left) and (right) Philter, the company's first amphibious trail runner.



cemented sheet rubber suction tread sole. Palm Profile Kayak or Crewsaver's multi-use are good examples of this category. These types of ankle booties are not necessarily required in warm weather climates but as maximum grip and cold weather footwear they do offer an advantage over bare feet or less substantial Aquasocks.

Multipurpose

These days, when one talks about amphibious footwear, most people think about the Aquasock. These multi-purpose Lycra/Polartec socks were originally developed from the previously popular neoprene socks used for scuba diving and snorkelling. This multi-purpose lightweight foot glove is ideal for general all-purpose beach and water use. It can also be used as a surfing or sailboarding shoe, inside a water-ski harness, as a beach volleyball shoe, or simply as protection for the feet in wet rock climbing. It is a simple turnshoe construction made of elasticised power nylon mesh with an inexpensive thin sheet or moulded rubber wrap-up sole. Nike was the first to develop, or at least popularise, this utilitarian category of water shoe and it has been copied and improved upon by many brands over the years. One of the simple improvements is to mould or cut slits in the sole to release the trapped water more efficiently. The Aquasock is probably the cheapest, most practical covering for the feet in and around water. New entrants into this market are Vasque and the swimsuit company Tyr from California.

Sculling and rowing shoes are a different form of land/water shoes. In these sports, footwear is used to anchor the feet into the boat in order to gain maximum leverage against the footboards for thrust. Rowing shoes are similar to track and cycling shoes in that they have nylon plate attachments in the forepart of the sole. These are screwed directly to the boat's footboards and, like cycling shoes, they must be easily removed should the dry boat suddenly become waterlogged. The removal is achieved via a quick-release hook-'n-loop closure system on the uppers. Adidas is one of the few companies making such a shoe. Patented after the classic pull-on Wellington boots, MEC Swellies feature soft neoprene uppers that allow unhindered use of kayak foot pedals and

painless kneeling in canoes. The ankle cuffs feature webbing-and-slider seals to help keep out boot-topping waves as you land or launch.

Moving to another boating activity - white water rafting - this form of amphibious shoe has become a big fashion seller in the marketplace. This category is credited to Teva from the USA, which developed a rubber/neoprene combination sole with nylon webbed upper for white water rafting for use inside a canoe or raft. It quickly established itself as a form of sport sandal on land but its origins and function really add comfort and grip if portage is necessary. The sandal can be easily removed for swimming, again using a hook-'n-loop closure system. Amongst Teva's efforts to define and refine the water sandal is a patent-pending 360 degree continuous strapping system it calls Wraaptor Technology that simultaneously secures the instep and arch shank to the foot. This creates a noticeable 'at-oneness' between the shoe and foot that provides heel-to-forefoot stability and motion support on land and in water. Most of the major brands like Nike, Merrell and Salomon as well as more specialised brands, such as Body Glove, Oakley, FiveTen and Reef Brazil have plunged into this market, which continues to grow as a comfortable leisure sandal.

Teva trail watershoe

Another innovation from Teva comes in the form of its advanced trail watershoe range, including its Gamma, X-1 and Philter. The Gamma, as part of the Teva Pro Series, has a Spider rubber outsole with a strategically-placed pod of S2 rubber in the arch for improved traction on wet, slippery surfaces such as those found on rubber rafts and rocks. On the Philter model, which is Teva's first amphibious

Vibram's FiveFingers, is an all-rubber foot sheath designed primarily for canoeing, kayaking, canyoneering and sport fishing.



trail runner, Teva incorporates AgION anti-microbial treatment, a process that uses ionised silver, a naturally occurring microbe inhibitor in the topsole (footliner) to help reduce odour-causing bacteria. The X-1 is the lightest weight trail shoe at 9.8 ounces. Several companies including Body Glove, Ryka, Nautilus and Nike have tried to introduce amphibious footwear specifically for exercising under water, otherwise called Aquacize. This shoe is really a more elaborate version of the Aquasock, using more expensive water-resistant synthetic materials and specially treated leathers. To date, the category has not gained great acceptance. However, new variations such as the Aqua Runner, offering zero impact footwear for water workouts using hook-'n-loop closure, EVA midsole and neoprene and nylon mesh uppers and Salomon's Tech Amphibian continue to be updated in a promising market segment.

Five fingers of innovation

Latest in the long line of amphibious developments comes surprisingly from Vibram Italy. FiveFingers is a result of a major technological challenge taken up by the Vibram R&D team. The goal was to imagine an innovative solution rendering the curves and volumes of the foot and capable of following its natural roll. Intended primarily for water sports, Vibram's FiveFingers is equally at home in the water and on slippery surfaces, which emphasises Vibram's technical compounding skills in making a tacky rubber outsole surface. FiveFingers has been developed in collaboration with major biomechanical institutes after three years of research and field (or in this case stream) tests. The result has been to produce a "second skin", which is an all-rubber "slipper" that provides the foot with its original sensitivity, freedom of movement and natural grasp on irregular slippery terrain. With an additional high level of protection, Vibram claims its new development is indispensable for the feet of the future.

Some of the anomalies associated with the broader look at "Amphibious Footwear" come in the form of "Amphibion" the nubuck leather from Salz that thinks it's a fabric. This remarkable leather retains the characteristics to remain supple after repeated wettings and not become slippery when wet. Then, there is the FiveTen Canyoneer Amphibious Climber – designed in Switzerland. Another interesting shoe is made specifically for the Olympic Steeplechase running event.

This shoe, which is only immersed in water eight times at approximately sixty second intervals during the race, was first developed by Diadora in Italy and is now manufactured by dedicated makers of Track and Field shoes – namely adidas, Puma, Asics and Nike. Rather than making the pretence of keeping the foot dry, steeplechase shoes offer the runner a normal track spike with either a toeless forepart or knitted mesh upper to jettison accumulated water as quickly as possible.

A recent entry into the amphibious category is Keen Footwear. Founded by a passionate yachtsman, the essence of Keen was the addition to a sporting sandal of the protected toe, making it suitable for the racing yachtsman to use.

Its Newport model with neoprene and water resistant and washable nubuck helped propel the company to fame within twelve months.

Finally, we must mention Geox, one of the recent success stories in the European leisure shoe market. Certainly not designed to be 'amphibious', the now famous Geox patented innovation requires the outsole to have holes punched completely through, which cannot avoid water seepage, only to block the water with a non-porous breathable membrane between the outsole and sockliner. Only Kevin Costner's fantasy webbed feet of the future could do it better, but that's only in the movies. 

