

Hardwater Parka

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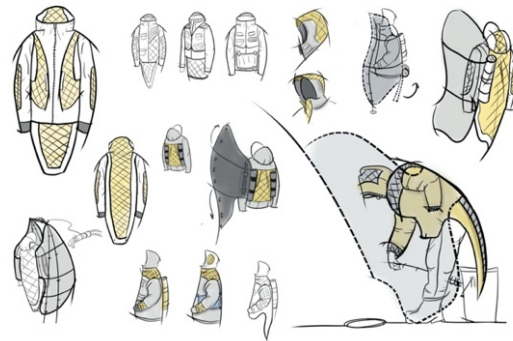
Keywords: Ice Fishing, Modular, Shelter, Wind

Contextual Review and Concept Statement

Ice fishermen face cold temperatures, blustery winds and cannot produce enough heat metabolically due to their stationary position to stay warm (Zhang, 2002). Thermoregulatory comfort is key to fishermen, so they can stay out on the ice and enjoy their sport. Ice fishing also requires a lot of gear and gadgets that get carried out onto the ice. For example, it is essential to have a shelter if one is planning to spend an extensive amount of time out on the ice. Because current ice fishing shelters are so big and bulky, they are often carried onto the ice via sled. The Hardwater Parka is a hybrid outerwear product that not only keeps the fisherman warm but provides a modular wind shelter that can be carried in unison.

Aesthetic Properties and Visual Impact

The Hardwater Parka visually reflects the environment it performs in. It consists of an off-white 100% cotton canvas base, with highlights of beige cotton quilting for durability and insulation. The parka is long sleeved, and the hem covers the rear and back of thighs. It also has Yulex (non-neoprene) cuffs, and an insulated hood. There is a red cotton bias tape accent on top of the parka hood for visibility and a sporty hunting detail. The wind barriers are organic in shape and encapsulates the athlete protecting them from the harsh winds. A non-petroleum base wax coating is applied to the entire product to provide natural waterproofing and patina over time. The materials selected make an attempt at being more sustainable by replacing virgin materials and reducing the use of petroleum-based fibers.



Process, Technique, and Execution

Initial prototypes were made through patternmaking and sewing before going into the construction of the final product. First, parka modularity and storage of the wind barriers was explored. Once the barriers and parka prototype were determined, aluminum pole supports needed to be engineered. Custom supports were made from aluminum Easton poles connected with shock cord, to provide curvature and tension at

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key intersection points. After configuring the wind barriers with the aluminum support structure, it was observed that the D-rings which were originally designated as pole support guides, did not hold the product down structurally. Canvas support casings were added to keep the wind barriers from sliding down the structure upon use and to harness the tension of the poles. The ‘beaver tail’ silhouette enabled a buttoned pouch to be created on the back of the parka to store the rolled-up support poles and wind barrier. A 3D printed component, called the Hardwater Stability Screw, was also developed to stake down the support poles into the ice, to provide stability and tension for the wind barrier to stand. The inserts for the tent poles would be screwed into the ice and carried on a carabiner when not in use. Finally, after understanding all of the shortcomings of the initial prototypes, a final product was made.

Cohesion

The goal of the Hardwater Parka was to provide a sustainable outerwear option for ice fishermen to improve their mobility and ability to spend time on the ice through a modular shelter that is built into the thermal protective parka. The Parka utilizes insulation for warmth, wax waterproof coating to keep fishermen dry, an insulated hood, hydro lock cuffs to keep water from dripping into gloves, and modular wind barriers that can be easily assembled for protection. All of the fishermen surveyed for the project expressed how essential having a shelter on the ice is when spending long periods of time fishing. In the future, development of an accommodation for the seated position would be explored by making barrier attachment points lower on the parka and decreasing the height of the barriers.

Significance, Rationale and Contribution

The Hardwater Parka is unlike anything on the market for ice fishermen. Its’ modular shelter includes two vertical wind barriers connected through an Aluminum support structure overhead to protect from wind on the open ice. Even when the barriers are raised and staked into the ground the fisherman is able to detach from the shelter and move in and around it with ease.

Originality and Innovation

Hardwater Parka is a sustainable outerwear option that not only enhances athlete performance but transforms in silhouette. The most unique feature of the Hardwater Parka is the wind resistant shelter that is fully integrated into the design.

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