Report to the

Northeast Consortium

On the FY2000 project titled

Commercial Trials of Flexible Trawling Devices Including Soft Trawl Doors

Principal investigator:

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Industry partner:

Robert Kohl, Marstons Mills, MA

Project duration: **July 1, 2000 to December 31, 2002**

Project description:

This project set out to explore the potential of flexible lifting devices as a way to control the performance of trawl nets. The principal are simple – to use the flow of water to generate hydrodynamic forces in a way that mimics the conventional effects weight, buoyancy, rigid hoops, and trawl doors. The concept emerged from an earlier series of model tests conducted by CFER. They concepts included the following devices shown in Figures 1 to 4:

Figure 1. Fishing line depressor kites

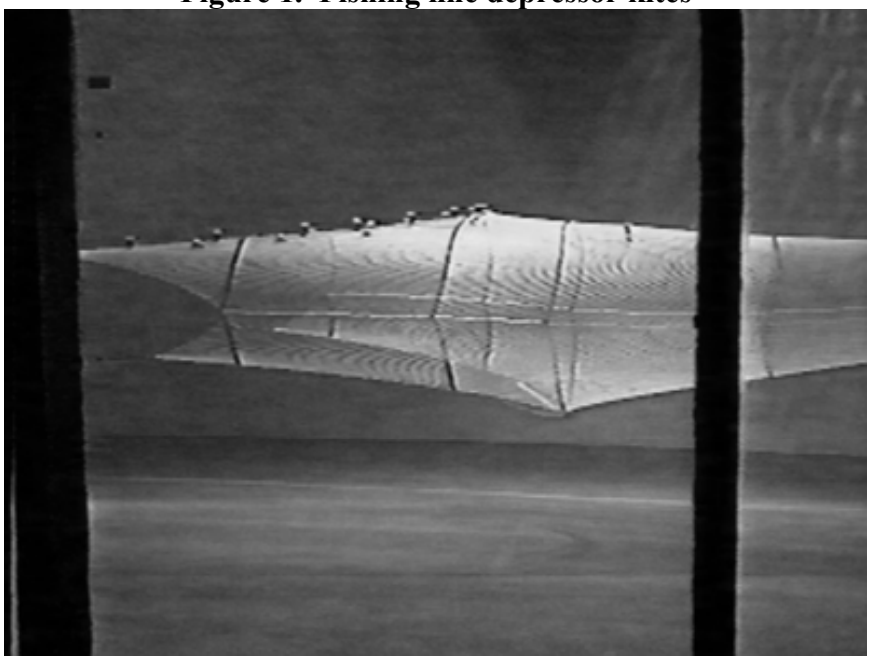


Figure 2. Annular foil lifting devices

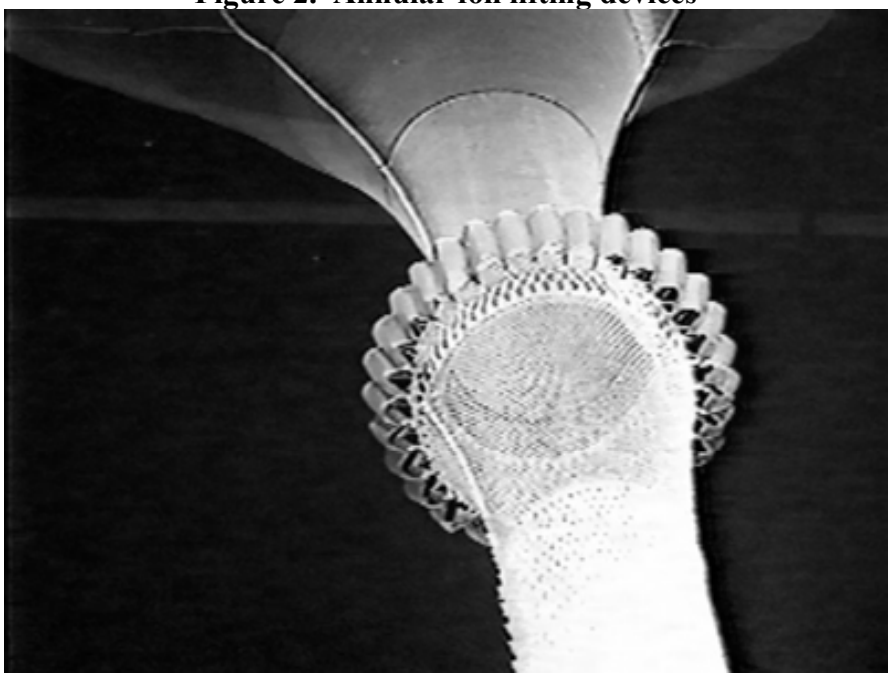


Figure 3. Triangular mesh kite

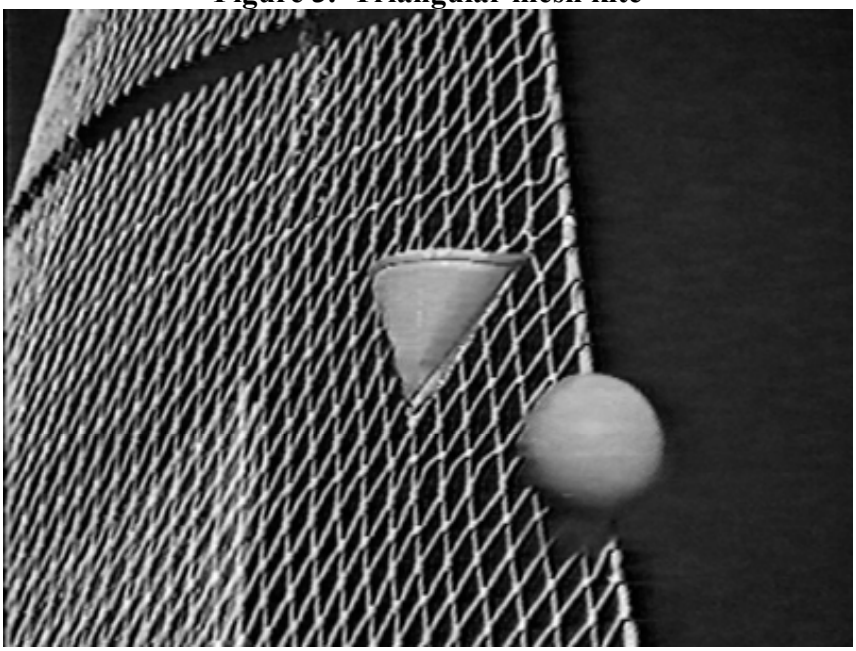
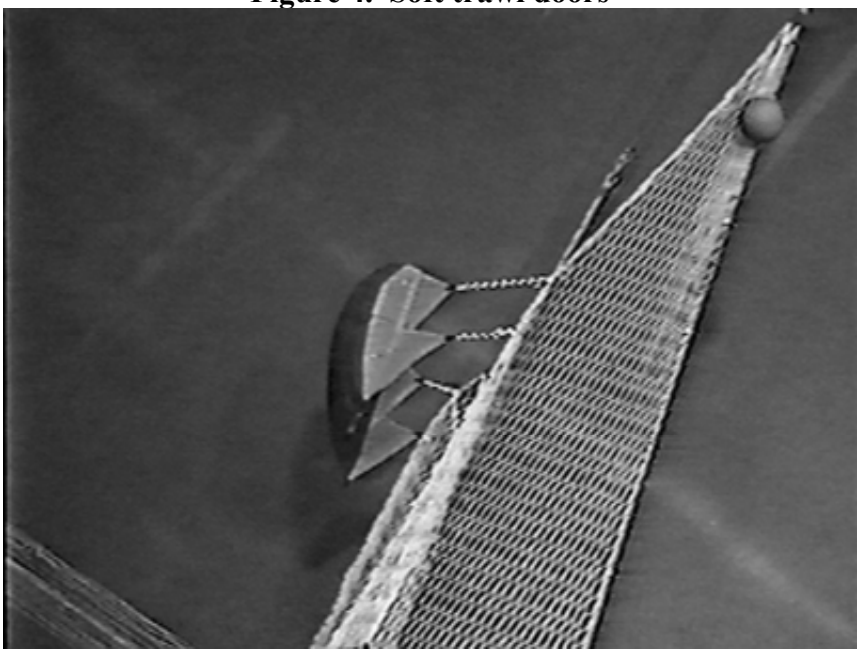


Figure 4. Soft trawl doors



For reasons of potential commercial applicability and potential value in mitigating trawl impacts, the annular foil and the soft trawl door were viewed as deserving further research under this project.

Accomplishments to date:

The funding and scope of work for this project was significantly altered in June or 2002 due to some factors beyond our control which included:

1) One of the partnering fishermen selling his boat,
2) The other fisherman switching to hydraulic claming during a potential field test season, and
3) The coated fabric manufacturer in Seattle failing to deliver ordered prototypes.

In spite of these significant project set-backs and our final field opportunity complicated by a early start to Winter, we have accomplished much of what we set out to do.

Work on the annular foil involved the design of a prototype device based on the success of the model results from the previous project. Figures 5 and 6 show the design.

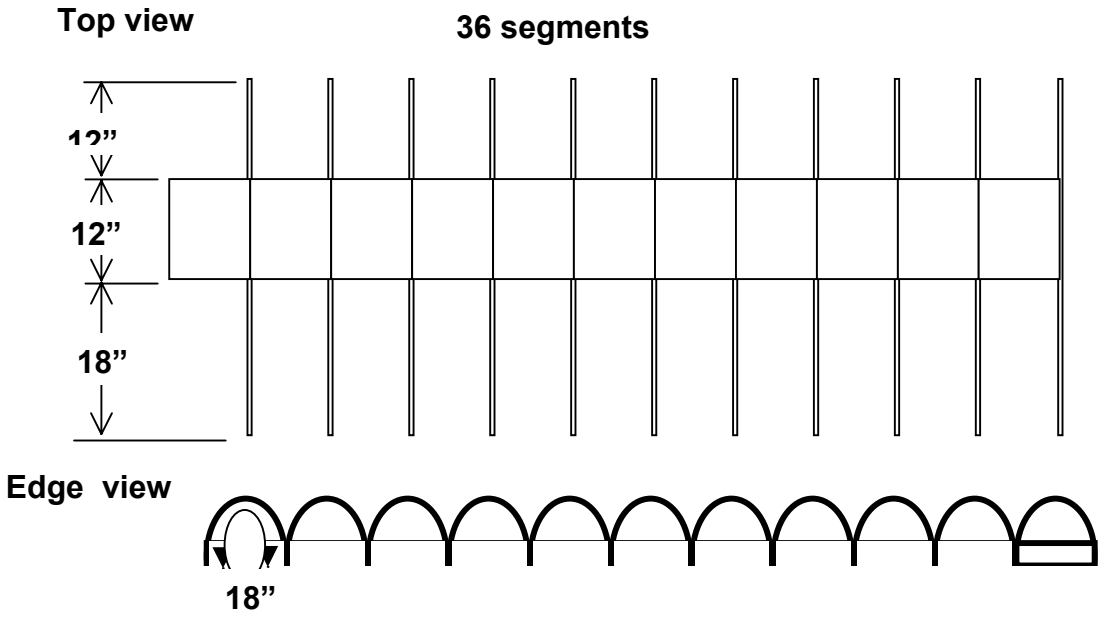


Figure 5. Prototype design of annular foil.

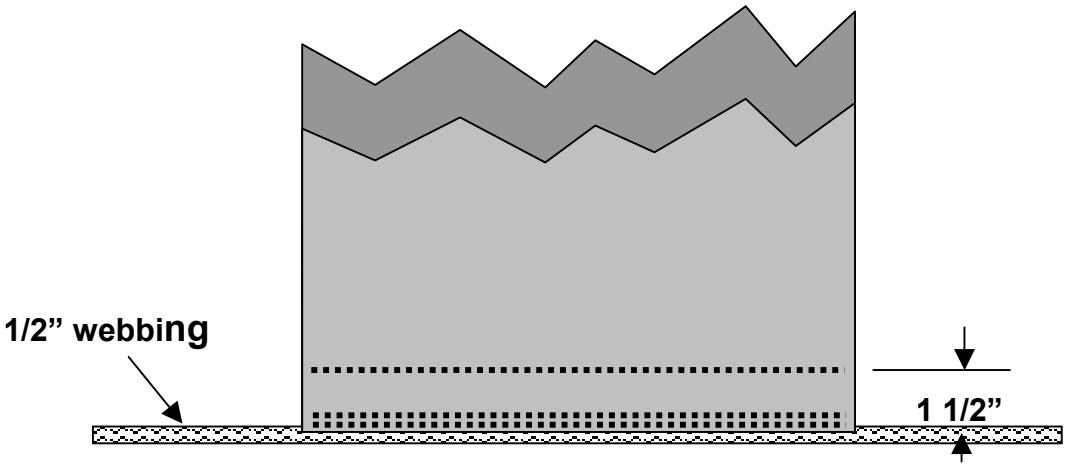


Figure 6. Sewing detail

The prototype was fabricated by Zac Industries of Danvers, MA. A heavy weight coated Polyester fabric was used. Tests were conducted in the Fall of 2002 aboard the F/V Glenna and Jacob of Hyannis, MA. Figure 7 shows the deployment of this prototype.

Figure 7. Prototype annular foil during deployment aboard the F/V Glenna and Jacob.

Initial tests indicated the need for a stiffer fabric, or some means of ensuring that the leading edge of each foil generates outward lift during the early stages of deployment. The unit was retrofitted by Zac Industries with an additional piece of fabric over the leading edge that captures a moderately stiff flat plastic batten. This solved the problem of fouled setting and the unit behaved predictable during subsequent use.

To date we have not been able to acquire catch and bycatch data to determine its selectivity implications. Also, weather has prevented us from observing the unit with an underwater video system as we had planned to do.

Deferred tasks:

Work with the soft trawl door was determined to be beyond the scope of the revised work plan as it would not be possible to perfect it, even within the extended time allowed for the project. Because of its potential in reducing the habitat impacts of trawl doors, we may develop the concept as a new project idea for consideration by NEC.

Future plans:

Additional days at sea are planned to obtain this information during the Spring of 2003. Both CFER and industry partner Capt. Robert Kohl see promise in the design. A revised project report will be submitted to include that data once it is obtained.