What I am going to talk about today is partnerships with the fishing industry in the Northeast. These are our partners. This picture was taken from a fishermen's rally in Washington two years ago. Fishermen came from all over the country. About 1000 total. 1000 might not sound like a lot, but some of the attendees included Senators Kerry, Schumer—important influential members. Many came from the Mid Atlantic and New England. They came to express complete dissatisfaction with National Marine Fisheries Service. Complete disbelief in the science.
These are some of the other people who attended the rally.

In terms of partnerships with fishermen, relationships take a lot of investment to make them possible. Maybe it's because I have a son about these boys' age, but man this picture makes me sad.

Distrust has been ingrained in the relationships between fishermen, government, scientists, conservation community. If we want to improve fish science, we need more data and we need data that fishermen trust.

If we want to generate more and better data, we need a way to collect that data.

Working with fishermen builds trust, and it builds science to guide the long term fish conservation these boys deserve.
3. We have a number of projects we are working on in the Northeast and Mid-Atlantic that depend on working with fishermen for their success. Today I am going to focus on two of them. One that spans this whole geography, from Georges Bank to the mouth of the Chesapeake.

The first project is with the University of Massachusetts and spans most of this area. The goal of the UMass project is better characterize species and habitats throughout this geography.

The second is a project in the southwest portion of the Gulf of Maine. My colleague Chris McGuire has been working with commercial fishermen tagging cod and tracking them to locate important spawning areas.
First we'll take a look at the project with the University of Massachusetts. The original partnership between the University and the fishing industry started in 1999. TNC wasn't a part of the project then. It was originally designed to collect information about scallop abundance. That's all they were focused on. Scallops (Scallop spp. priced with a dollar sign, as in $10 a pound in good years). The University partnered with industry to put together a “second opinion” on the status of scallop stocks. The second opinion proved the scallops were in fact recovering from overfishing. UMass with the scallop industry has surveyed similar areas every year.

2012 Scallop Video Survey
- Karen Nicole: MA1, WIND_N
- Courageous: MA2, WIND_S
- KATE: MA3
- Horizon: MA4
- Endeavor: MA5
- Westport: GB1
- Diligence: GB2
- Incentive: GB3
- Justice: GB4
- Huntress: NLCA, CAI, WIND_N2
The whole survey was conducted from industry vessels. The pyramid is deployed with three video cameras and one still camera on a 1-km station grid with 4 locations sampled at each station. This system documented scallops very well. The scallop data has been very well analyzed. So that's not what we are interested in. Our focus is mining the ten years of video surveys to look at occurrences of other species; also look at habitat types.
6. How did they collect all this information?

This is the SMAST video sampling pyramid mounted on a commercial fishing vessel ready to be lowered to the bottom. Over the course of 10 years, they lowered this thing more than 200K times. This is what the pyramid looks like. It is simple and small enough that it can easily be installed on most commercial fishing vessels. It captures wide range, close up and side view images.
These are the kinds of things that were captured on the video.

- What are we going to get out of our investment in analyzing 200000 camera drops?
- Species distribution maps from information collected in the video survey.
- Analysis of sediment data.
- Analysis of species assemblages and their associations with different bottom types.
- Incorporation of oceanographic variables.
- Surface sediment stability maps across the entire survey area.
- Analysis of seasonal and inter-annual change of physical conditions in the video survey area.
- Analysis of linkages to change in environmental conditions and climate-related variability.
Goosefish
Lophius americanus
Juvenile Flounder
Even as we are benefitting from the relationship that the university originally established with industry, we have our own relationships to build as well.

Sharing and getting feedback on this project from FMCs ocean councils, regulators and fishermen. Including outreach through outlets like CFN so there is broad awareness of the project and so that when the time comes there is a willingness to use the results to improve conservation.

In 1998, the sea scallop resource was recovering while the industry continued to struggle. At that time, the seafood industry asked the University of Massachusetts Dartmouth School for Marine Science and Technology (SMART) for help in procuring and developing the methods of monitoring and managing the resource.

Now, nearly 15 years later, we have completed more than 165 video surveys across the essential fish habitat of Georges Bank and other areas.

As a result, there has been an increased emphasis on the role of video surveys as a tool to help improve the management of the scallop resource.

Although the past SMART "Scallop Surveys" was very successful, we have now transitioned to more advanced techniques using "Video Analysis Software".

A tremendous amount of important data in these video image remains to be analyzed.

Early this year, the scallop ISA

A tremendous amount of important data in these video images remains to be analyzed.
Second project is more site specific off the coast of Massachusetts, and more species specific—Atlantic cod. This is the Massachusetts State House of Representatives. In the House of representatives is a wooden painted sculpture of a codfish (hanging top center). This sculpture is known as the Sacred cod. It has been there since the Early 1700s. This is part of the reason this second project is focused specifically on cod.
This is another reason we focus much of our work in the northeast on cod. This map, put together by NMFS, shows what distribution of cod from 1968-72. Georges Bank is clearly highlighted with cod hotspots in yellow and red, as is the western gulf of Maine, WGOM. This is the location of the project that our colleague Chris McGuire is leading out of the Massachusetts chapter. Ok, so this is 1972. Don't blink.
13. This is what cod distribution looked like from 2003-2007.

So now I can just stand here for 20 seconds and we can all feel sad and depressed about the depleted status of cod stocks in the Northeast.

Or, we can talk about Chris's project working with fishermen who fish in and near this area where cod are still occurring, we think, spawning.
This is the area where our Massachusetts chapter is conducting its cod tagging project. The goal of the project is to locate spawning areas and then protect them during spawning. Friend/Scituate fisherman, Frank Mirarchi, came up with the idea. This is now a cooperative project with TNC, U Mass, Stellwagen Bank National Marine Sanctuary, State of Mass, and NMFS. The goal was to implant 150 acoustic tags into codfish before spawning. Once they're tagged, the fish send out a signal that can be picked up and recorded by an array of underwater receivers.
Here is our dear colleague Chris just before giving the heave-ho to one of the passive acoustic receivers that have been collecting information on tagged fish for the past two months.

He's on a fishing vessel with two fishermen who work out of Green Harbor, MA. Once these devices are retrieved (sometime soon when the weather allows), we will be able to look at the data they collected on the tagged fish.
16. December fishing in the Gulf of Maine. Nothing better. Bill Hoffman works for Mass DMF, and Doug Zemeckis is a Ph.D. candidate at UMASS. They're using rod and reel to catch cod for the project. They are on a Scituate, MA-based commercial fishing boat.
Capt. Kevin Norton, in the middle, of the Scituate-based commercial fishing boat "Yankee Rose." Like the other pictures this was taken on a trip in December. Capt. Norton is tossing a cod into a holding tank as crew and DMF and TNC and UMass watch.
• Surgery
• DMF staff suturing cod after the tag has been implanted.
• Again, did this 150 times over.
Kind of like outpatient surgery. You're done, and home you go. Now we wait to see what the acoustic receivers collected.
20.
Chris chatting with DMF staff, at the end of a balmy tagging trip on another Scituate, MA-based commercial fishing boat.

TNC with state agency staff on a commercial fishing vessel. And their smiling. Quite unlike the first picture we looked at of the protesting fishermen in Washington DC.

Progress.