

we bought biscuits in the Shetlands. They were unsweetened biscuits in a jar and did not taste very good. The jars they came in, on the other hand, were very nice and it was mostly because of the jars that we bought them.

When the unloading of the ling was finished, the preparations for the next trip started and after a week of rest we were on our way to the Shetlands again. We made three trips that season. Our earnings for all three trips were 1,800 kronor per full share. I had three-quarters of a share, and so I got 1,200 kronor for five months' work. These days, in Sweden, a skilled workman might earn that much in a day. But things were different then.

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Hurricane Andrew and South Florida's Commercial Fishing Peoples

Impacts and Immediate Needs

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ABSTRACT The authors visited south Florida shortly after Hurricane Andrew struck the region in August, 1992, in order to assess the storm's impacts on commercial fishers and to learn about their needs for recovery in the storm's aftermath. Surprisingly, while discovering that the region's fishing peoples had indeed suffered grave impacts as a result of the storm, they also learned that practically no attention had been focused on these peoples by the governmental and scientific institutions which otherwise are responsible for south Florida's fisheries and marine ecosystems.

Introduction

When Hurricane Andrew slammed into south Florida's coastline early in the morning on August 24, 1992, we assumed there were devastating impacts on that region's commercial fishers and fishing industry.¹ After all, the storm hit with winds in excess of 170 MPH, killed 41 people and injured many others, damaged 125,000 homes and apartments (of which 63,000 were utterly destroyed), left 160,000 people homeless, caused around 20 billion dollars in property damage, and required that 23,000 federal troops be sent in to provide relief and secure the area against widespread looting and other crimes (*Sun Sentinel* 1992:5 and 17; Anonymous 1993:1-8).

Later that same day, as televised news broadcasts began to show pictures of the destruction left in the storm's wake, we imagined with horror what must have happened to south Florida's coastal fishing peoples. Certainly there must be many fishing vessels sunken and broken apart in their berths, or stranded on high ground, shore facilities destroyed and partly washed away, and debris strewn everywhere. We figured a few fishers probably lost their lives, while many others must now face economic ruin in the storm's aftermath. Surely, we thought, a storm as violent as Hurricane Andrew must have exacted a heavy toll on south Florida's commercial fishing peoples.

We feel that commercial fishing peoples merit special attention when extreme events – in this case a violent tropical storm – impact coastal zones. Commercial fishers are almost always present in such regions, and they are usually a distinct sociocultural and occupational component of the larger coastal population. Moreover, their high degree of dependency on coastal resources and facilities leaves them particularly vulnerable to suffering great losses when extreme events occur in the regions in which they work and live.

For studying the problems of commercial fishers, we have found the concept of the 'natural-resource community' (NRC) to be very useful (see Dyer, Gill, and Picou 1992). In the fisheries, we define NRCs as people whose economic welfare and sociocultural identities are similarly articulated with, and dependent upon, certain marine resources. In this sense, a 'fishing community' may include peoples living in a named, nucleated settlement, which obviously has a great deal of fishing industry, as well as dispersed commercial fishers living here and there along a coastline who do not live in any particular settlement. What is important is that fishers in either situation have much in common, and for purposes of locating them and assessing their problems and needs it is useful to conceptualize them as natural-resource communities.

Prior to Leaving for the Field

Eager to see south Florida's fisheries as soon after the storm as possible, we applied for Quick-Response Grants, which are funded by the National Science Foundation and administered by the Natural Hazards Research and Applications Information Center at the University of Colorado-Boulder.² We titled our project 'Reconnaissance of south Florida to Assess Damages, Planned Responses, and Future Needs in the Fisheries Stemming from Hurricane Andrew,' and what we intended to do was make a week-long field study of the hurricane's impact on south Florida's fishing peoples, as well as find out what relief efforts were needed. Overall, we hoped this endeavor might eventually become the basis for subsequent research involving similar natural disasters in other coastal fishing communities, as well as reveal needed reforms in south Florida's fisheries policies.

Once we learned that our proposals had been favorably reviewed and funded, we prepared to leave for south Florida, and eventually arrived there in late October, around 2 months after the hurricane had gone through. However, shortly before leaving for Miami, we were puzzled by a piece we saw in *National Fisherman* (Fee 1992:12) – the journal of record for much of the commercial fishing industry in north America. The piece was titled 'Hurricane Andrew: A Narrow Swath Cut Through Florida,' and, regarding the storm's impact on south Florida's commercial fisheries, it characterized the storm as being more like a '20-mile wide, two-hours-long tornado,' than the extensively destructive storm we assumed it had been after

our exposure to television and print news. The piece quoted a biologist from Florida's Department of Natural Resources (DNR) as saying 'I had the impression this was not the storm,' that is, not 'the big one,' that everybody had predicted for years would eventually hit south Florida. Furthermore, the article went on...

Because wind damage, rather than water damage, was Hurricane Andrew's claim to fame in Florida, and because the effects were serious along such a narrow corridor, most of south Florida's commercial fishing industry was untouched by it. From Key West to Marathon, and westward past Flamingo to the southwest coast's Everglades City, commercial fishermen were wide-eyed over their good luck.

The article also noted that marine biologists were disappointed that the storm had not been more severe. For more than 30 years, it said, the area had not experienced a big storm which might beneficially cleanse important marine habitats of the turtle grass which had come to choke them in recent years.

Thus, as we packed our bags for the flight to Miami, we wondered just what we might find. Would there be any significant impacts on south Florida's fishing peoples worthy of our scrutiny, or, instead, as the article cited above suggested, would we find the region's commercial fishers 'wide-eyed over their good luck' at having come through comparatively unscathed?

In South Florida

After arriving in Miami we found lodgings in Coral Gables in the south end of greater Miami; south of here there were no viable lodgings available, and even in Coral Gables we found our hotel had sustained considerable damages, with several rooms unavailable for occupancy, and considerable water damage in the main hallways leading to all the rooms. Then, we rented a car and spent our first two days driving around, familiarizing ourselves with the region the hurricane had most severely impacted, and meeting with all the commercial fishers we could locate.

Overall, the devastation throughout the region was much worse and more extensive than we had anticipated. Indeed, as we drove around we commented several times that the scenes we were seeing brought to mind 'ground zero' in the aftermath of a thermonuclear blast, only in this instance 'ground zero' had travelled across the landscape, leaving in its wake a 25-mile wide corridor of awesome destruction. Thus, we were surprised to find how little the region had recovered in the nearly 2 months that had elapsed between the storm's passing and our arrival. We found that most of the region's roads had been cleared of debris – which had been removed to several mountainous dump sites – and electrical power had been restored throughout most of the region, but otherwise the restoration effort seemed to be only beginning. Throughout the most severely impacted zone we saw hundreds of abandoned homes which lacked roofing or walls, everywhere the trees were

broken and bare, debris was everywhere, federal troops still patrolled the area, and many people were living in tents or other makeshift shelters.

During our first days in south Florida we met with various fishermen, learning first hand how they had come through the storm, and about the losses they had suffered. After that, we had several meetings with state and federal officials who are concerned with the region's commercial fisheries, as well as with scientists at the region's major marine-research institution. From these peoples we hoped to learn how they had assessed the damages to south Florida's commercial fishing peoples in the aftermath of Hurricane Andrew. However, and to our great surprise, they basically corroborated the story we had read in *National Fisherman*, affirming the view that the storm's impact on the region's commercial fishing peoples had been minimal.

'Minimal Impact'

We presumed that the agencies and institutions we contacted, both during our field study and subsequently through correspondence, would be the ones that would be responsible for assessing the impacts of the hurricane on commercial fishers, as well as for planning and coordinating relief efforts. All of these agencies, and the marine-science institution, have offices in the greater Miami area.

Prior to leaving for our trip we had contacted Florida's Department of Natural Resources, inquiring about the effects the storm had on south Florida's commercial fishing folk. In reply, we had received information which speculated on what might have happened to certain valuable marine stocks, but otherwise were sent no information concerning the storm's impact on commercial fishing people. Next, after arriving in Florida and meeting with various officials of this agency, we were surprised to learn that it had made no efforts, nor did it intend to make any effort, to assess the impacts of the hurricane on south Florida's commercial fishers. Expressing surprise at learning this, one official at the DNR told us that the agency was charged mainly with assessing fish stocks and reporting on marine-ecological conditions, and was not charged with fisheries management per se. The agency, he said, reports its stock assessments to the National Marine Fisheries Service (NMFS), and defers most fisheries-management responsibilities to that agency.

Our next meetings were at the regional offices of the National Marine Fisheries Service in Miami, where we met with the director and members of his key staff. Here again, they corroborated the view that the hurricane had made only a 'minimal impact' on south Florida's commercial fishing peoples. Moreover, they stressed, there are 'almost no commercial fishermen' in the region of south Florida that was impacted by the storm, and the few that did exist there were few in number and geographically quite dispersed. South Florida's 'boating community,' they told us, was mainly comprised of recreational fishers, whom they said had suffered grave

losses, whereas the total number of commercial fishers in the impacted region was 'insignificant.'

We were assured by these NMFS staff members that the few commercial fishers that were to be found in south Florida had come through the hurricane practically unscathed. And, when we asked whether anybody from their organization had made any visits to the impacted region to assess possible impacts commercial fishers might have suffered, they repeated that there simply were not enough fishers in this region to justify such an effort, and, moreover, that any such fishers were so dispersed that they would be hard to locate now, particularly in the aftermath of the storm. The only community of commercial fishers in the area of any significance, they said, was a group devoted to catching spiny lobsters, whose docks were along the Miami River in downtown Miami. However, they were quick to point out, these were located considerably north of the storm's destructive path, and as a result had suffered no loss of life nor any damages to their vessels. Instead, they assured us, these fishers 'came through just fine,' as their boats safely rode out the storm snug in their berths along the Miami River. Then, when we asked if anybody from the NMFS had interviewed any of these fishers to learn about possible losses caused by the storm, one staff member joked, 'no, how could we, none of us speak Cuban.'

While making the rounds in Miami we also visited the Rosenstiel School of Marine and Atmospheric Science (RSMAS). This institution is a component of the University of Miami which, for the most part, is supported by the Sea Grant Research Program of the National Oceanographic and Atmospheric Administration – in much the same manner as other major U.S. marine-research institutions. Here we learned that the RSMAS had underway the development of a research proposal for assessing the impact of Hurricane Andrew along south Florida's coastlines. However, we also learned, the impacts that would be explored were limited to the storm's effects on marine organisms and marine ecology, physical and chemical oceanography, and other traditional oceanographic and ocean-science concerns – and there would be no exploration of the storm's impact on any people. Subsequent to this visit we received a copy outlining the RSMAS's proposed research more fully, yet lamentably – and despite our urging that they do so – they have no intentions of studying the impact of the hurricane on south Florida's people – commercial fishers, or otherwise. Thus, while one section of the RSMAS proposal is elaborated under the subheading of 'The Community,' all that is planned in this regard is to assess the extent to which sunken recreational fishing boats are contributing to coastal pollution by leaking fuels and lubricants into the region's harbors and bays.

We felt that perhaps the Federal Emergency Management Agency (FEMA) and the Small Business Administration (SBA) might have focused some special attention on south Florida's commercial fishing peoples, but, as far as we know, they did not. Given the magnitude of destruction caused by the storm and the limited resources these agencies had available, it is understandable that they could not focus

special attention on one component of the business sector, such as commercial fisheries. The FEMA, for instance, was practically overwhelmed in trying to find adequate food, clothing, and shelter for all the region's inhabitants – regardless of their occupations. And, the SBA, which was similarly limited in terms of resources, faced the reality that more than 82,000 business enterprises in the region had been badly damaged or destroyed (Anonymous 1993:1).

In February, 1993, nearly four months after we returned from our field study in south Florida, the Florida DNR sent us information concerning the more than 100 fish processors in the south Florida region. By DNR regulations, the region's processors are required to make monthly reports concerning what types of fish products, and in what quantities, they have processed and sold during the required reporting interval. There is a 'comments' section at the bottom of each report, which we analyzed, and subsequently we determined that 67% of the processors who had sent reports to the DNR had reported suffering severe impacts from the storm. Typical comments included these: 'we're only now getting back into operation,' 'we'll never re-open,' and 'we're still out of business.'

Lamentably, our 'discovery' of these severe impacts of the hurricane on south Florida's fishing industry stems from our own analysis of DNR data, and not from any explicit acknowledgment of impacts on the part of the agency. And, since that time, we have repeatedly asked Florida's DNR, the regional offices of the NMFS, and other agencies and institutions which we thought might have been concerned with impacts on the region's commercial fishing peoples, to provide any such information they might have. To date, however, we have received no such information.

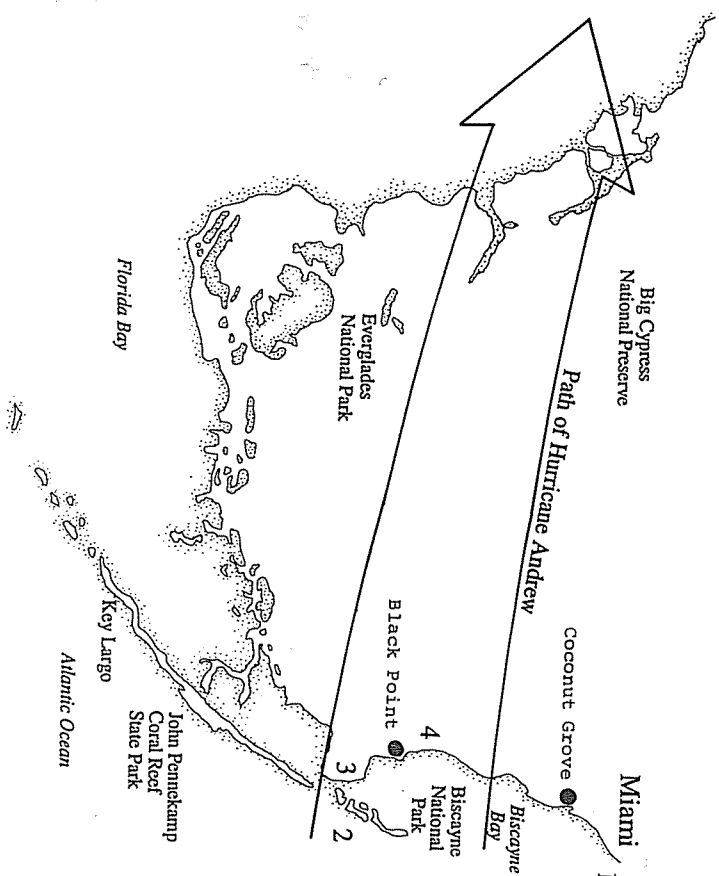
Andrew's Impact on South Florida's Commercial Fishing Peoples

The impact of Hurricane Andrew on people working in south Florida's commercial fishing industry was anything but minimal. In fact, during our field study practically everywhere we looked we uncovered evidence of widespread and severe impacts on commercial fishers and others involved in the region's fishing industry.

First of all, we found there had been widespread destruction of marine habitats and commercially important marine species, and we are grateful to both the Florida DNR and the regional offices of the NMFS for supplying us with documentation of these losses. Artificial reefs, for instance, which are deployed along southeast Florida's coastline, are important to the region's commercial fishers, as well as to other components of the state's recreational sector, particularly the diving industry. Mainly these artificial reefs consist of sunken vessels or other man-made structures, such as old oil rigs, and they greatly increase the productivity of marine life practically anywhere they are deployed.

Among the twenty-six major artificial reefs situated in the region impacted by Andrew, twenty-two were damaged, fifteen severely. Those severely damaged included the Arida (flattened and crushed), the Almirante (turned upside down), the Miracles Express (reduced to rubble), the Tarpon, and the Belzona Barge, which had not been found two months after the hurricane – despite intensive efforts to do so! Concerning the Belzona Barge, Ben Mostkof, Artificial Reef Coordinator for the DNR in south Florida stated:

This was a barge two-thirds the length of a football field. It was so large that it took five minutes to swim its length. It's not the kind of thing you would think would just disappear (*Miami Herald*, 1 September 1992).



1. Artificial reefs heavily damaged and moved.
2. Offshore coral reefs may be destroyed or damaged; heavy loss of lobster traps.
3. Seagrass communities had minor direct damage but may be affected by erosion and increased nutrients from runoff.
4. Mangroves flattened, uprooted, or defoliated.

Map 1. Path of Hurricane Andrew (adapted from T. Grantham, *Miami Herald*, 8 September 1992).

The artificial reefs which have been placed off the Dade coast from the Broward line to Homestead are the backbone of a local diving industry, which has important recreational and commercial components. Some of the more important species of marine life to be found around these reefs, and which are of interest to both groups, include jackfish, snappers, sea basses, and groupers.

The devastation wrought on artificial reefs is clear evidence that seafloor configurations were severely altered by the force of Hurricane Andrew in the impacted area, a finding which is clearly opposite to that which was reported in *National Fisherman* shortly after the storm. Robert Arno, a Miami dive captain for 11 years, said the following about the Tarpon, a 165-foot sunken vessel:

Everything that was alive on the reef was picked clean. It was alive with soft corals, sea fans, and sponges, and now nothing is there. It has been ripped right out of the bottom. I swam way north and way south along the reef and it's all the same. It's just devastated. Looking to the future, you have to wonder if it will ever be a viable dive site again (*Miami Herald*, 1 September 1992).

Similarly, the destruction of natural coral reefs in south Florida also hurt the local diving industries – both commercial and recreational. And, again, this impact was not quickly appreciated by local governmental officials. However, by now various assessments of the impact on marine productivity which may have resulted from damages to artificial and natural reefs caused by the hurricane have been launched by the Florida DNR and the RSMAS.

Severely deleterious impacts on other fishery habitats, including mangrove and seagrass regions, have also been discovered, especially by the Florida DNR and the RSMAS. Not surprisingly, their preliminary reports all suggest that the storm did indeed have a devastating and extensive impact on these environments and their respective marine resources (see Map 1). However, rather than elaborate further upon these marine-environmental impacts, for which there is already a growing body of worthy scientific information, we wish to focus instead on the storm's impact on peoples working in south Florida's fishing industry.

Because of time limitations, our study of commercial fishing peoples along the south Florida coast is more a sample than a truly comprehensive survey. Nevertheless, we found the conception of the natural-resource community quite useful in helping us to locate and analyze the storm's impacts on the major components of this region's otherwise dispersed commercial fishing industry. We eventually identified three important components of south Florida's commercial fisheries which had suffered particularly significant losses as a result of the storm. These, we are fairly certain, are the major components of south Florida's commercial-fishing NRCs, and include the following: the bait fishery; the spiny lobster fishery; and the seafood processors. Below we summarize the deleterious impacts suffered by each.

South Florida's bait fishers catch shrimp for sale to recreational fishers in the region. We met with bait fishermen at two locations: the large marina at Coconut Grove in the south end of greater Miami, and the marina at Black Point, situated

nearly 20 miles down the coast and where the center of the storm's eye had passed. The impact we discovered among the bait fishermen at Coconut Grove was one we had not anticipated; these reported that they had not experienced any loss of life, serious injuries, or even the loss of any fishing vessels or important fishing gear. Instead, they said, because of the extensive losses of recreational fishing boats – whose owners, generally speaking, were either not as skilled or as interested in securing their boats in advance of the storm – local demand for bait shrimp had dropped considerably, and several of these fishermen said they might have to go out of business if it did not increase soon.

At the Black Point marina, on the other hand, which had experienced the full fury of the storm, the situation for commercial fishers was much worse. There almost all of the recreational boats that used the marina had been severely damaged, with many completely destroyed, resulting in an almost total collapse in demand for the bait shrimp caught by commercial fishers working out of the Black Point marina. However, unlike at the Coconut Grove marina, at the Black Point marina many of the commercial bait boats had suffered severe damages as well.

Thus, when we visited the Black Point marina, only two months after the hurricane had gone through, only 2 of its 17 bait boats had resumed operations. The fishermen working on these boats told us that despite good quantities of shrimp



Photo 1. Commercial fishermen at the Black Point marina repair their bait boat in the aftermath of the storm (photo by J.R. McGoodwin).

being available and correspondingly good catches, they were experiencing insufficient demand for their production to justify continuing operations. Moreover, all of the fishermen we met at Black Point expressed great uncertainty concerning whether they might remain in business in the near future. Several doubted they could raise sufficient capital to make necessary repairs on their boats, and nearly all said that while there currently seemed to be a lot of shrimp immediately offshore, they worried that the extensive destruction of the mangroves around Black Point – the main rearing grounds for the shrimp – might mean a collapse in these stocks in several months in the future. Moreover, all expressed resentment that the NMFS – that agency of the U.S. government which they felt should be concerned for them – had done nothing. 'Tell the fisheries service we need help,' one group repeatedly urged us.

Another component of south Florida's commercial fishing industry that suffered severe impacts was the spiny lobster fishery, and particularly the lobster fishers who are located in downtown Miami along the Miami River. These people fish exclusively for spiny lobsters, a high-value export item, by deploying baited traps in relatively shallow waters offshore, and it is precisely this group which NMFS officials told us had come through practically unscathed. When we met with these fishers we learned that all 25 of the boats involved in the fishery had come through in good condition, and the nearly 100 fishermen who work on these boats – nearly all of whom are either Cuban immigrants or descendants of Cuban immigrants – had experienced no loss of life or any serious injuries. Indeed, just as the staff member at the regional NMFS offices had told us, these fishermen had been able to secure all their boats snugly in their berths along the Miami River well in advance of the storm's arrival.

Nevertheless, we quickly learned of two especially severe impacts these fishermen had suffered as a direct result of Hurricane Andrew. First, they all had a large number of lobster traps deployed when the first storm warnings were announced, and subsequently were only able to recover around 20% of these prior to the storm's arrival. Overall, the fleet lost around 80% of its lobster traps, amounting to an average loss per fishing boat of around \$16,000.

Moreover, these fishermen explained, their fishing success was heavily dependent on their ability to intercept lobsters along certain predictable migration routes. These routes, they explained, are imprinted when the lobsters are still young by magnetic fields along the sea floor. However, now that the storm had greatly disrupted bottom configurations in the areas they customarily fished, the lobsters were not showing up at the usual locations in the same numbers, and catches had dropped considerably. Thus, these fishermen stressed, even if they had the same number of traps they had before the storm, and even if the lobster resource was not diminished by the storm, they were no longer able to sustain pre-storm production levels because the lobsters were no longer showing up along their usual

migration routes (something which the Florida DNR has independently corroborated for us).

The lobster fishermen along the Miami River also made many expression of frustration and anger concerning the Florida DNR and the NMFS, who, they said, had not shown any concern for them. Similarly, they expressed critical sentiments concerning the SBA, who they felt had not provided adequate loans to help them replace the lobster traps they had lost. Several even offered an opinion that the Florida DNR had secretly urged the SBA not to provide loans sufficient to restore their traps to pre-storm numbers. Before the storm, they said, the DNR had for many years been trying to limit the number of traps a boat could deploy, and over the past several years had progressively raised license fees on traps to discourage any increase in their numbers. Thus, these fishermen said, the storm had accomplished for the DNR what it had been unable to accomplish on its own: a significant reduction of the number of traps being utilized in the fishery. They also said they had repeatedly disputed the DNR's attempts to limit the total number of traps being utilized in the fishery in the interest of conserving the resource, feeling the DNR was showing undue favoritism for the recreational diving industry, which also targets spiny lobsters. The DNR denies urging the SBA to drag its feet in providing



Photo 2. Spiny-lobster fishing boats, such as these along the Miami River, safely rode out the storm in their berths. However, this fleet lost approximately 80% of its lobster traps, such as those seen stacked on the dock (photo by J.R. McGoodwin).

loans to replace lost lobster traps, but otherwise feels it is a healthy thing for the fishery that the total number of traps now being utilized by the commercial fishers is considerably less than what it was before the storm.

The third sector of south Florida's fishing industry which we found had suffered significant losses as a result of Hurricane Andrew is comprised of fish processors. Many of these suffered the complete loss and destruction of their operating facilities, and all experienced a total loss of refrigeration capability in the aftermath of the storm. This was because of the complete loss of electrical power, not only in the region which was directly in the storm's path, but indeed all the way down to Key Largo, more than 30 miles south of where the center of the storm had gone ashore. Indeed, it was several months before many processors had their electrical power – and refrigeration capacities – restored. A few processors were given priority in having their electrical services restored if they agreed to supply ice to the regional populace at a pre-established price, but many others whose facilities had come through with only minor damages were otherwise unable to resume operations for several months.

Moreover, many processors whose facilities were situated directly in the storm's path suffered such severe damages that it is doubtful that they may ever resume operations. And, beyond these problems, the massive disruption of the local economy in the impacted region left even those processors who were able to resume operations with few customers. Local demand for seafoods, they noted, has dropped considerably now that so many of the region's people are living on relief funds, and because so many others have moved away permanently.

Discussion

Prior to leaving for the field we naively assumed that the principle agencies which are involved with the fisheries in south Florida would be responsible for assessing the hurricane's impact on the region's commercial fishing peoples, as well as for developing relief efforts. Thus, during our field study we were surprised to learn that none of these agencies had undertaken such tasks.

Subsequently, we have learned that there are no legislative mandates or standing operating policies – neither at municipal, county, state, or federal levels – which require any of the agencies which we knew to be articulated with south Florida's fisheries to take such responsibilities. Instead, these agencies' legislative mandates and current operating policies are almost exclusively directed toward marine-ecological and marine-conservationist issues, and not people. So, if we made any discovery it is simply that there are no governmental agencies in south Florida which have primary responsibilities for seeing to the well being of the region's commercial fishing peoples and fishing industries in the wake of natural disasters such as a major hurricane. We have therefore documented a human tragedy that

otherwise might never have been reported, and in doing so have discovered needs for changes in legislation and fisheries policy in the south Florida region – and indeed the rest of the United States.

Regarding natural disasters such as Hurricane Andrew, there is legislative authority for a NMFS response, but it is limited to providing for the restoration and replacement of marine habitats and marine natural resources, and has no provisions for providing relief for the fishing industry per se. This legislation, which is known as the Interjurisdictional Fisheries Act (1987, P.L. 99-659, Title 3, Section 308(b), U.S. Congress), enables a NMFS response to natural disasters, but all that is provided for is the assessment of damages and restoration of marine-ecological systems, with no provisions for relief for the commercial fisheries per se.

Under the provisions of this act the NMFS provided \$4.1 million to the state of Louisiana for the restoration and replacement of marine natural resources. However, no such funds were supplied to Florida – *even though such funds were potentially available*.

Why did Louisiana receive such significant funding which provided, in part, for making assessments of damages to important commercial fish stocks and for their restoration, while south Florida did not? First, and simply, it is because Louisiana requested funds under the act while Florida did not. The act stipulates that the U.S. Congress has to appropriate funds under the act, and that the state receiving such funds has to both request the funding, and be willing to match it by 25%.

Secondly, regarding the fisheries, the situation in Louisiana is quite different from that in south Florida. Louisiana has a large, concentrated, economically significant and politically influential, commercial fishing industry, which is highly visible in several of the coastal communities which were severely impacted by the hurricane; south Florida, on the other hand, does not. Thus, Louisiana's commercial fishing sector had sufficient political clout to enable it to persuade state legislators to seek relief funds under the federal act mentioned above, as well as to provide the requisite matching funds.

Commercial fishers in south Florida, while more numerous than the NMFS officials we met with in Miami had suggested, are geographically very dispersed, do not comprise a large number of people relative to the rest of the total populace in the region, are economically much less significant in the region's economy as compared with their counterparts in Louisiana, and therefore have far less political clout. And, unlike in coastal Louisiana, in south Florida there is no highly visible 'fishing community', that is, no small towns, villages, or harbor areas which might be identified as commercial fishing towns, villages, or sites. Instead, south Florida's commercial fishers are intermingled with the surrounding urban, suburban, and ex-urban populace.

Nevertheless, there is still a substantial commercial-fishing populace scattered along south Florida's coastline, which, as mentioned earlier, we were helped to locate and analyze by the concept of the natural-resource community. Overall, we

estimate this 'community' to consist of around 200 primary producers, plus several times that number of ancillary people who supply and support the fishing industry – a significant chunk of humanity whose welfare following the storm was woefully neglected.

There is another crucial difference between the situation in Louisiana and that in south Florida. While both states have significant recreational-fishing sectors, in south Florida the recreational sector of the fisheries long ago eclipsed the commercial sector in terms of its economic significance, political power, and corresponding ability to influence fisheries-management policies. Both Meltzoff (1989) and Durrenberger (1992:195-96) have discussed the pre-eminence of the recreational fishing sector in south Florida (and in the Florida Keys), and particularly its ability to dominate fisheries policies against the interests of the commercial sector. Durrenberger describes how 'fishing for fun' has supplanted 'fishing for exchange' in south Florida's fisheries, noting these fisheries have become 'playgrounds for the rich,' and he criticizes this as an aspect of the state's 'Disney World' mentality (ibid.).

Recommendations

As maritime anthropologists with particular interests in fishing peoples, we found the neglect of south Florida's fishing peoples in the aftermath of Hurricane Andrew to be deplorable. In essence, we feel the NMFS is the natural and obvious federal agency in the U.S. government which should be responsible for assessing the impacts of natural disasters on fishing peoples, while working with other state and local governmental entities to coordinate relief efforts, mitigation, and recovery. After all, commercial fishing is a business, and the NMFS is part of the U.S. Department of Commerce. On the other hand, it seems appropriate that other agencies – the Environmental Protection Agency, for instance – have no mandate to help commercial fishers in the aftermath of natural disasters, and should instead remain focused on environmental and ecosystem concerns.

At present the NMFS has no such mandate to help commercial fishers come through natural disasters such as hurricanes, and, correspondingly, no discretionary funds for attending to these needs. Thus, we hope legislation will be introduced which will enable the NMFS and the state agencies articulated with it to play a more decisive role in seeing to the needs of U.S. commercial fishers in the wake of natural disasters.

Now, slightly more than a year since we visited south Florida, we understand from correspondence that the coastal area which was directly struck by Hurricane Andrew is still one of widespread destruction, and that many commercial fishers have been unable to resume fishing – their preferred lifestyle. We also remain unaware of any significant efforts on the part of any governmental agencies, or

research institutions, to assess the impact the hurricane had on the region's commercial fishers and to help with their recovery.

As a result of completing this brief field study which focused on a single occupational sector in south Florida, a sector which otherwise has little visibility in the region, we have been able to illuminate human problems which otherwise might have escaped wider attention. This affirms for us the value of applied-anthropological research of this sort. It also enables us to proceed to the next stage of our work – bringing these problems to the attention of governmental and scientific institutions, individuals, and others, whom we hope will help commercial fishers come through natural disasters in the future.

Notes

1. Throughout this article, wherever we refer to 'south Florida' we mean the east and southeast facing Atlantic coastline of the Florida Peninsula from Miami southward to the Florida Keys. That coastline has a sizeable human population and is where practically all commercial fishing is based. The remaining coastlines of the Florida Peninsula – those to the south, southwest, and west – have negligible human populations, almost no commercial fishing industry, and for the most part are part of the Everglades National Park.

2. We especially thank Gilbert F. White, Director, and Mary Fran Myers, Project Manager, at the Natural Hazards Research and Applications Information Center, University of Colorado, Boulder, for their advice and support in conjunction with this project.

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