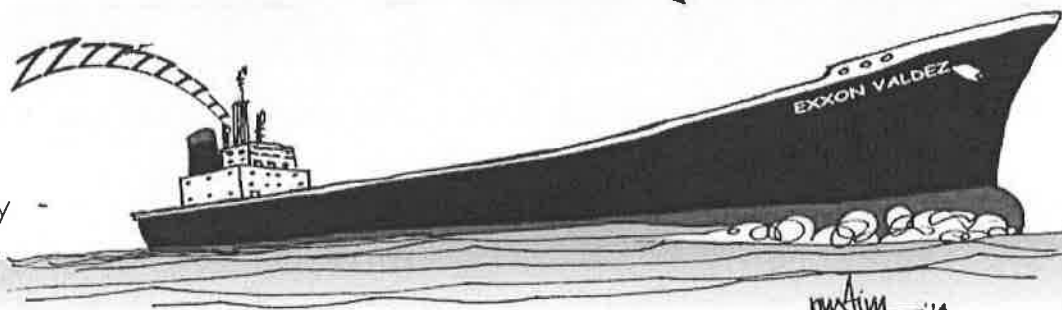


Observations: 25 years since *Exxon Valdez*

An invited comment by
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Picou



MARCH 24, 2014 MARKS 25 YEARS since the *Exxon Valdez* ran aground on Bligh Reef in Prince William Sound, Alaska. The accident occurred after the tanker's captain, Joseph Hazelwood—who had a history of alcohol abuse and whose blood still had a high alcohol level 11 hours after the spill—inexplicably exited the bridge, leaving a tricky course correction to unlicensed subordinates (Exxon v. Baker 2008: Syllabus p.1).

The vessel spilled between 11 million and 33 million gallons of crude oil into one of the most pristine ecosystems in the world. It unleashed a disaster on local coastal communities with economic and cultural ties to natural resources damaged by the spill and clean-up. Social impacts of the disaster became chronic. Key resources, such as herring, failed to recover. Litigation became embroiled in a series of appeals that delayed resolution until 19 years after the spill.

The *Exxon Valdez* oil spill provided an opportunity to document human impacts and community recovery from a technological disaster. Beginning with a Quick Response grant from the Natural Hazards Center, Steve Picou and Duane Gill initiated a study of Cordova, Alaska in August 1989. A commercial fishing community with a subsistence heritage rooted in Alaska native culture, Cordova became ground zero for negative impacts from the spill. Before the spill, Cordova consistently ranked in the top ten most profitable U.S. seafood ports, but it dropped all the way to 54th place in 1993 and although it made a brief comeback from 2005-2008, it was in 27th place in 2012.

Picou and Gill's initial research evolved into a four-year community study (1989-1992) using a field experiment design that included Petersburg, Alaska as a control community and Valdez as a comparison community. This was followed by a project to develop and implement an alternative community mental health program from 1995-1997. Joined by Liesel Ritchie in 2000, our research team continued to document long-term sociocultural and psychosocial impacts of the disaster as we expanded our focus to include the litigation process, decision, and disbursement of damage awards. A 1994 jury verdict in Federal District Court found Exxon negligent and awarded \$287 million in compensatory damages and \$5 billion in punitive damages to almost 33,000 plaintiffs.

After numerous appeals, the U.S. Supreme Court heard the case and issued its decision on June 25, 2008. The Court ruled that Exxon was liable, but reduced the punitive damage

award to \$507 million—a one-to-one ratio to “actual” damages. Plaintiffs began receiving checks in October 2008 and by December 2009 almost all awards had been dispersed. We collected data before and after the decision. Our last official data collection was a 2013 telephone survey of Cordova and Petersburg residents.

This 24-year longitudinal study of the disaster included quantitative and qualitative methodological designs and provided a unique source of data and knowledge regarding community impacts and recovery. During the last 13 years, we engaged in three major types of data collection: (1) cross-sectional telephone surveys of the Cordova community and a control community (Petersburg) in 2000, 2006, 2009, and 2013 (led by Picou); (2) surveys of a renewable resource user group panel consisting of Alaska natives and commercial fishermen in 2001, 2006, 2009 (led by Gill); and (3) qualitative interviews with a panel of community residents in 2002-2003 and 2008-2010 (led by Ritchie). This article summarizes some of the key findings of this comprehensive research effort.

One important observation that is often overlooked in conversations about Cordova is that it is a resilient community with many hard-working, intelligent, good-hearted citizens. Among the most consistent findings throughout our surveys from 1989 to 2013 were the high levels of community attachment reported by respondents. For example, in 2000, 90 percent of Cordovans agreed/strongly agreed that Cordova was a good place to live—95 percent did so in 2013. It is also noteworthy that throughout our formal interviews and informal conversations over the years, no one attributed all of the community's ills or all of their personal issues to the *Exxon Valdez* disaster. Rather, they tended to recognize and acknowledge the significance of the spill to the community but have sought diligently to move forward—although for two decades bureaucratic processes limited their ability to do so.

Initial impacts

TECHNOLOGICAL DISASTERS produce high levels of uncertainty. This was apparent among Cordovans who experienced the spill as they became uncertain about short- and long-term effects on the ecosystem, as well as their community, families, and livelihood. The spill evoked reactions ranging from sadness, concern, and uncertainty to frustration, anger, and outrage at the grounding and inadequate spill response. Initial impacts in Cordova included high levels of collective trauma,

social disruption, economic loss, and psychological stress. Consistent with the “corrosive community” concept (Freudenburg 1997), social relationships were disrupted and community relations became strained in response.

Survey data from 1989 to 1992 revealed significantly higher levels of social disruption and psychological stress in Cordova compared to Petersburg (the control community) and Valdez (an impacted community more dependent on the oil industry than commercial fishing). Survey data from Cordova also showed significantly higher levels of psychosocial impacts among commercial fishermen and Alaska Natives compared to other residents.

The renewable resource community concept was developed to situate community, group, and individual reactions to this disaster. The RRC concept emphasized sociocultural and psychosocial relationships with the Prince William Sound bioregion. It focused attention on reactions to lost or damaged resources, as well as threats of long-term loss. This concept helped explain why Cordova was experiencing significantly higher levels of negative social impacts than the control and comparison communities, and why groups with the strongest cultural, social, and economic ties to ecosystem resources—commercial fishermen and Alaska natives—were more severely affected.

Chronic impacts associated with resource loss

THROUGHOUT 24 YEARS OF RESEARCH, our data have consistently shown that a large majority of Cordovans believe the Sound’s bioregion suffered permanent damage from the accident. There has been strong empirical evidence for these beliefs. Initially, scientists identified 26 species of wildlife damaged by the spill, but the most recent report indicated only 10 have fully recovered (EVOSTC 2010). Long-term loss of ecosystem resources has delayed recovery of subsistence, commercial, and recreational fisheries.

One of the species that has not fully recovered is Pacific herring—a keystone species in the Prince William Sound bioregion and an important resource for commercial and subsistence fisheries. The herring biomass collapsed in 1993 and as of 2013 had not recovered. Pacific herring was integral to the fabric and rhythm of community life through subsistence and commercial harvests. Prior to the disaster, Cordova’s herring industry was worth \$12 million. It accounted for almost one-third of the local economy, employed more than 1,100 people, and provided economic stability. For the past two decades, Cordova has struggled to fill this void in its local economy.

Subsistence relations have been disrupted and the herring spawn as a significant symbol of spring’s arrival has been reduced to memories. Data on subsistence behaviors among renewable resource user group panelists (2001-2009) indicated almost 90 percent participated in subsistence activities, with more than 75 percent giving and receiving subsistence foods. However, more than one-third of the panelists reported declines in the amount of subsistence participation and sharing. Many Alaska natives reported herring as the main subsistence resource they could not obtain. Decreased subsistence partici-

pation, particularly activities related to herring, also reduced opportunities to transfer cultural knowledge and traditions to future generations.

Essentially, Cordova’s commercial fishing season was shortened by two months. Instead of seasonal residents arriving in late February to prepare for herring, most now return in early May. As a result, seasonal residents spend less time in the community, which has affected community structures, social capital, and the local economy. The demise of the herring fishery caused some year-round residents to migrate from Cordova, which further disrupted community relationships.

Negative social impacts were exacerbated by contested herring science, most of which was sponsored by corporate interests and tied to litigation. Conclusions reached by corporate science were generally contrary to traditional ecological knowledge of commercial fishermen and Alaska natives. Government-sponsored herring science got off to a slow start and was generally inconclusive. Among Cordova residents, this generated skepticism about science and contributed to beliefs about recreancy—perceptions that an organization (in this case, the government) is not fulfilling its public responsibilities.

Loss of bioregional resources and economic revenues and opportunities contributed to persistent psychological stress. We used the Conservation of Resources (COR) model (Hobfoll 1988), based on the assumption that psychological stress results from loss of resources, threat of resource loss, and/or when resources are invested without gain or return. The model distinguished four types of resources—objects, conditions, personal characteristics, and energies. Cordova experienced losses in all four resource categories after the oil spill and during the prolonged litigation. As predicted by the COR model, our community and renewable resource user group survey data consistently revealed significant relationships between resource loss/gain and psychological stress.

Psychological stress

SURVEY DATA, CONTEXTUALIZED AND SUPPORTED by qualitative findings, documented chronic patterns of spill-related psychological stress. We used the Impact of Event Scale (IES) to measure event-related stress (Horowitz 1986). The scale was designed to measure ongoing stress from traumatic events by focusing on intrusive thoughts and avoidance behaviors—two subscales that comprise the IES. Scale and subscale means are comparable to clinical cases and other events and the IES provides clinical classifications into sub-clinical, mild, moderate, and severe categories. The latter two indicate potential needs for mental health interventions.

IES and subscale means calculated for the Cordova community, commercial fishermen, and Alaska Natives from 1989 to 1992 revealed high levels of stress. 25 to 50 percent of respondents fell into the moderate and severe categories. Commercial fishermen and Alaska natives consistently had higher scale and subscale means compared to other Cordova residents—a pattern that held regardless of socio-demographic factors such as gender, age, education, income, marital status,



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and dependent children in the household. The mean intrusive stress score for Cordova in 1989 and 1990 and commercial fishermen and Alaska natives in all four years was similar to means reported in clinical cases involving bereavement from parental death and rape victims two years after the rape.

Litigation—the primary mechanism used after a technological disaster to obtain relief and compensation, reduce vulnerability, and enhance resiliency—directly contributed to chronic psychological stress. Over time, research demonstrated that chronic *Exxon Valdez*-related stress was significantly related to being a litigant and experiencing litigation stress—more so than being a commercial fisherman or Alaska native.

The IES and subscale means in Cordova generally decreased after the Supreme Court decision and disbursement of punitive damage awards, but Alaska natives registered an increase in IES and avoidance means in 2009. Analysis of Cordova community data in 2006, 2009, and 2013 indicated that psychological stress was consistently predicted by being a litigant—a pattern observed during the years of litigation and five years after the final decision. Analysis of resource loss and psychological stress in Cordova in 2009 and 2013 revealed that gains in conditions resources (e.g., family stability) significantly decreased stress, while losses in Prince William Sound ecosystem resources significantly increased stress.

IES classifications for the Cordova community indicated that by 2013, only 13 percent of Cordovans manifested severe and moderate levels of stress. Clinical classifications for the renewable resource user group panel revealed that four out of ten panelists were in the moderate to severe categories across all time periods. Notably, 10 percent of the panelists remained in the severe category in 2009 after the Supreme Court's litigation decision and payments to plaintiffs.

Analysis of the IES for this panel in 2009 indicated that perceptions of recreancy were significantly related to IES with less trust in litigation organizations (i.e., Exxon, the Ninth Circuit Court of Appeals, and the U.S. Supreme Court) resulting in higher levels of psychological stress. By 2013, the Cordova community was moving toward recovery from spill-related mental health impacts. Nevertheless, former litigants and Alaska natives continued to exhibit long-term psychological problems associated with the *Exxon Valdez* disaster.

A new species of recreancy

INSTITUTIONAL TRUST IS FUNDAMENTAL to social capital. Diminished trust in social institutions is linked to perceptions of

recreancy. Most *Exxon Valdez* oil spill survivors believed Exxon and Alyeska were recreant, so trust in these institutions was diminished. Others blamed state and federal government agencies for inadequate regulation, complacency, and poor response. Prolonged litigation and controversial legal decisions extended perceptions of recreancy to the federal government, judicial system, and the U.S. Supreme Court.

Prior to the Supreme Court decision, Cordovans expected that mostly positive outcomes would result from a favorable litigation decision and payment of punitive damages. They generally expected positive changes in family, work, future plans, and community, an economic upswing, improved mental health, and a sense of closure. Negative outcomes were expected if litigation were not resolved in the plaintiffs' favor. These outcomes included: (1) increased mental health issues; (2) increased domestic violence; (3) further decline in social capital; and (4) a sense of injustice and betrayal. About one-fourth of the 2006 renewable resource user group panel were concerned that a favorable decision would create additional stressors and disruption as disparities between the "haves" and "have-nots." Others anticipated no major changes in the community.

After the 2008 decision, Cordovans reported a profound lack of trust in the Supreme Court and judicial process. One resident observed, "I think that the decision ... created a whole other ball of wax for a lot of people here. They went from being angry at Exxon, to being angry at the legal system." Another observed, "Our legal system has allowed them to get away with it. It's not just the legal system; it's the political system. There could be enough pressure brought to bear [to make them pay].... Nobody has brought any pressure to bear [on Exxon]."

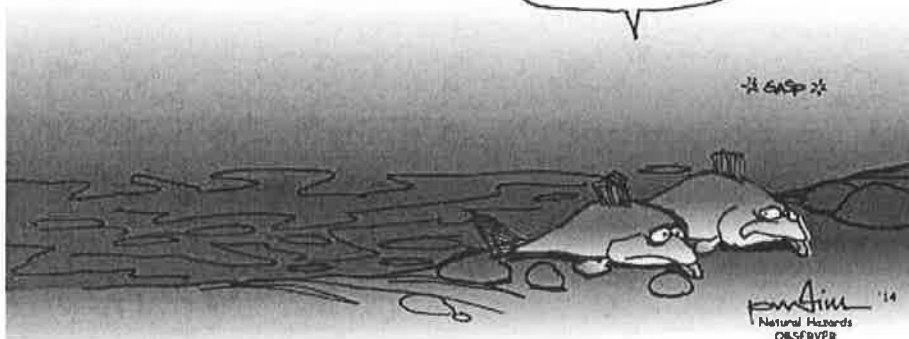
Most Cordovans considered protracted litigation as preventable and believed Exxon could have chosen to "pay up" and help the community recover and move on. They also believed the federal government failed to hold Exxon accountable and fulfill its obligation to protect citizens. Deliberate decisions by government, the courts, and Exxon inflicted additional pain and suffering on litigants and delayed community recovery. As a community leader observed:

"The disappointment over not having my \$2.5 million [claim paid] wasn't as profound to me as the loss of confidence in our legal system. I'd always thought that the Supreme Court was near to God,

[that] they were just above reproach, and could not be influenced by even the biggest corporation. [But] the Supreme Court is not above reproach. And the biggest corporation in the world is in charge. That was hugely disappointing and I'm still disappointed. If ... any semblance of the original trial by jury, the verdict, and the compensation had been awarded, that could have provided closure for me. But now there'll never be closure, for me, because it's influenced how I look at the United States and our legal system. It's just changed everything ... I don't trust anybody anymore in government."



GASP



Most Cordovans do not believe justice was served by the resolution of the *Exxon Valdez* litigation. The Supreme Court decision confirmed a lifescape change in which basic social institutions such as government and the judicial system cannot be trusted to fulfill obligations to protect citizens. Perceptions of recreancy have become embedded in the collective conscious of Cordova. Because of this fact, many Cordova residents expressed "reluctant resignation" regarding the litigation outcome. Years of litigation contributed to an apathy that affected relationships with big business, government, the judicial system, and for some, contributed to a lack of closure from this disaster.

Conclusions

DRAWING CONCLUSIONS FROM 25 YEARS of research is a tenuous undertaking. One of our interviewees offered an insightful perspective:

"The problem is if you are trying to write a report on this and you see too many endless possibilities, you would never finish it. Every time you open one door, there will be two more doors. If you open one of those doors, there are two more doors. So you [have to] stop opening doors. At one point you start drawing conclusions from the doors you have opened."

To that end, this article presents some of the most compelling evidence from our studies. After the spill, Cordova experienced economic losses, sociocultural disruption, and psychosocial stress that persisted as compensation from litigation was delayed and the herring fishery failed to recover. The collapse of herring changed sociocultural structures and processes and perpetuated economic losses.

Cordova experienced chronic loss of resources that litigation failed to mitigate. Residents closely tied to damaged ecosystem resources, experienced high levels of psychosocial stress. The 2008 Supreme Court ruling slashed the punitive damages award and did not cover economic losses of most plaintiffs, particularly herring fishermen. Moreover, the adversarial litigation process and final decision eroded trust in the judicial system and diminished community social capital.

Many Cordovans do not expect to see recovery of the ecosystem in their lifetimes. Without restoration of the herring fishery, sociocultural changes associated with the collapse will likely become permanent. The resolution of the litigation marked a point of closure for many Cordova residents. For others, closure is ultimately related to the recovery of ecosystem resources such as herring and oil-free beaches. Some firmly believe that complete closure is not possible.

Since the 1989 disaster, there have been numerous large scale toxic contamination events in the United States. Within the past few years, the 2008 Tennessee Valley Authority coal ash spill and the 2010 BP oil disaster in the Gulf of Mexico fouled the natural environments and generated considerable social disruption. Ongoing research on these disasters has built directly upon the solid foundation provided by studies of the *Exxon Valdez* oil spill and continues to lend to our understanding of such events. More recent technological disasters include the January 2014 contamination of the water supply in Charleston, West Virginia and the February 2014 Duke coal ash spill that is affecting communities in North Carolina and Virginia.

These incidents are unpleasant reminders that this not so

new "species of trouble" (Erikson 1994) continues to affect our natural and social environments in devastating ways. It is in this context that we encourage thoughtful, deliberate dialogue and action to promote preparedness, response, recovery, and mitigation efforts associated not only with what are typically thought of as natural disasters, but technological disasters, as well.

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