

## FICTION

## Armageddon in the Oceans

Boris Worm

“Worms. Monsters. Methane. Natural disasters. It was time for a drink.” This is how marine biologist Sigur Johanson sums up the state of the planet just days before all hell breaks loose in Frank Schätzing’s eco-thriller *The Swarm*. Following disaster movies such as *The Day After Tomorrow* and *The Core*, the book focuses on a global threat set to end human civilization. Only this time, it comes from the depths of the ocean, and some of the book may be closer to reality than we would like.

Initially, the threat builds slowly. Fish and whales disappear. Invasive species foul ship hulls. Jellyfish and toxic blooms appear more frequently and in unusual places. This probably sounds familiar. Indeed, these are the usual reports from an ocean that is being transformed on a global scale. While I am typing this, I look out on the Northwest Atlantic—one of the most overfished regions of the world (2). I am reminded of my university years on the Baltic, where I studied noxious algal blooms that spoiled beaches. And I think of the formerly fish-rich Benguela upwelling system off Namibia, which is now dominated by millions of tons of jellyfish (3), and the many other locations heading toward similar fates (4, 5).

Overall, these changes are gradual and, for most of us, difficult to see. However, there is a real concern that complex marine ecosystems can shift suddenly and catastrophically (6). In *The Swarm*, the rate of change is sped up by a few orders of magnitude, we get fast-forwarded into some of the scarier scenarios for our planet’s future, and we must face the several environmental crises simultaneously: a rapid spindown of the Gulf Stream and Atlantic deep-water circulation, destabilization of methane hydrates on the sea floor, toxic seafood, and deadly dinoflagellate blooms, among others.

The global consequence is an ocean that turns deadly. People living near the coast

have to flee inland. The shipping, fishing, and tourism industries grind to a halt. The ocean becomes a no-go zone. In painting these scenarios, however exaggerated they may be, the author manages to show the reader how intimately our lives and well-being are linked to the ocean—and how our landlubbing species is often happy to ignore changes in the seas, until it is too late.

Scientists feature prominently in this story as the only characters who are thinking about the big picture. They are the canaries in the coal mine, the main defenders against the enemy that is our own ignorance. Yet, they are also shown to be slow to communicate their results, usually waiting for absolute certainty.

At one point in the story, marine scientist Heiko Sahling warns, “We don’t have time to leave anything to anyone [else].... We know exactly what is going to happen.” But by then it is too late to stop the massive blowouts of methane gas that later trigger a tsunami in the North Sea.

In another scene that resonated with me, science journalist Karen Weaver discovers that the global circulation pattern is collapsing. She only sees the extent of the problem when the military gives her unlimited access to global satellite data, which has been combined to “form the complete history of oceanic mapping.” She muses that “[p]roving the existence of global changes meant obtaining data on a global scale.” I agree. This is what emerges as the most interesting message from the book: that the oceans are changing on a global scale, that our understanding of these changes always lags behind them, and that too often we are too slow, too conservative, or simply too unimaginative to put all the pieces together.

In preparing to write this novel, Schätzing (a marketing executive in Cologne who has written several successful historical crime novels) spent several years researching marine issues and talking to scientists, and his efforts show. Not only entertaining, the book is also packed with interesting facts about topics ranging from whale behavior to marine geology. Even some of his protagonists (such as Sahling, with whom I spent my

### The Swarm A Novel of the Deep

by Frank Schätzing

Translated from the German (1) by Sally-Ann Spencer. ReganBooks (HarperCollins), New York, 2006. 893 pp. \$24.95. C\$32.50. ISBN 0-06-081326-1. Paper, Hodder and Stoughton, London. £12.99. ISBN 0-340-89523-3.

The reviewer is in the Department of Biology, Dalhousie University, 1355 Oxford Street, Halifax, NS B3H 4J1, Canada. E-mail: bworm@dal.ca



**They came from the deep.** The Spanish-flagged bottom-trawler *Ivan Nores* hauled these fish up from the depths of the North Atlantic Ocean.

undergraduate years) are real people; others are pure fiction. Similarly, while some of the story is based on real information, most is complete fabrication. My biggest concern is that it is almost impossible to disentangle where the facts end and the author’s imagination takes over. Yet, this mixture has been hugely successful in raising people’s awareness and interests in the oceans. The book has sold millions of copies in Europe and has reportedly led to large increase in the profile (and funding) of marine science in Germany, where it was first published.

For me, *The Swarm* only drags in the last few chapters, when the action-adventure bit takes over and the science goes completely overboard. The ensuing battle between good and evil finds scientists and the military racing to apply their contrasting “cures” to the world’s problems. Will the oceans be saved? Will reason—finally—prevail? The answers are available in a bookstore near you.

#### References

1. F. Schätzing, *Der Schwarm* (Kiepenheuer and Witsch, Cologne, Germany, 2004).
2. T. E. Essington, A. H. Beaudreau, J. Wiedenmann, *Proc. Natl. Acad. Sci. U.S.A.* **103**, 3171 (2006).
3. C. P. Lynam et al., *Curr. Biol.* **16**, 492 (2006).
4. H. K. Lotze et al., *Science* **312**, 1806 (2006).
5. K. L. Weiss, U. L. McFarling, *Altered oceans*, www.latimes.com/oceans (2006).
6. M. Scheffer, S. Carpenter, *Trends Ecol. Evol.* **18**, 648 (2003).

10.1126/science.1133793

CREDIT: KATE DAVISON/GREENPEACE

Downloaded from www.sciencemag.org on December 7, 2006