

# The Evidence

## Excerpts from:

### Why the World Needs a Time-out on High-seas Bottom Trawling

L.E. Morgan<sup>\*</sup>, E.A. Norse<sup>\*</sup>, A.D. Rogers<sup>+</sup>, R.L. Haedrich<sup>‡</sup>, S.M. Maxwell<sup>\*</sup>

<sup>\*</sup> Marine Conservation Biology Institute, USA

<sup>+</sup> British Antarctic Survey, Cambridge, UK

<sup>‡</sup> Memorial University of Newfoundland, St. John's, Canada

## Six Reasons why High-seas Bottom Trawling Needs an Immediate Time-out

### 1) High-seas Bottom Trawling has Spread Rapidly but is of Minor Economic Importance.

Rather than fishing deep-sea fishes sustainably, commercial bottom trawlers reflect a typical pattern of serial overfishing that is best summarized as “plunder and push on.”

Landings from high-seas bottom trawling make up 80 percent of high-seas bottom fishing, yet the habitats on which bottom trawling occurs—the rocky substrates of mid-oceanic ridges, seamounts, and submarine canyons—are rare, occupying less than 4 percent of the seafloor.<sup>1</sup>

Globally, the market impact of HSBT is tiny; it constituted only a fraction of one percent of the reported total marine fish catch in 2001 by volume and value.

### 2) Bottom trawling is the world's most destructive type of fishing.

Morgan and Chuenpagdee and Chuenpagdee and colleagues polled fishery professionals including fishermen, managers, conservationists, and scientists for their assessment of the ecological impact of 10 major fishing gears used in US waters, and found that experts from all sectors agree that bottom trawling is the most damaging fishing method of all.<sup>2</sup>

### 3) Deep-sea fishes are inherently vulnerable to overfishing.

As a result of their slow growth and low reproductive rates, deep-sea fishes are the most vulnerable of all fishes to overfishing.<sup>3</sup>

Because of the generally low food supply in the deep sea, fishes there are normally rather dispersed and come together in large groups only to spawn. From the perspective of HSBT, those aggregations provide the most profitable target. Exploiting their spawning aggregations is more like mining than fishing, because it so severely reduces the chance of recovery.<sup>4</sup>

---

<sup>1</sup> Gordon et al 1995, see note 3; Glover and Smith 2003, see note 8

<sup>2</sup> Chuenpagdee, R., et al (2003). Shifting Gears: Assessing collateral impacts of fishing methods in US waters. *Frontiers in Ecology and the Environment* 1: 517-524; Morgan, L.E., and R. Chuenpagdee (2003). *Shifting Gears: Addressing the Collateral Impacts of Fishing Methods in U.S. Waters*. Island Press, Washington, DC

<sup>3</sup> Gordon et al 1995, see note 3; Morato et al (2004). Vulnerability of seamount fish to fishing: Fuzzy analysis of life-history attributes. pp. 51-60 in T. Morato and D. Pauly, eds. *Seamounts: Biodiversity and Fisheries*

<sup>4</sup> Johannes, R.E. (1998). The case for data-less marine resource management: examples from tropical nearshore fin fisheries. *Trends in Ecology and Evolution* 13:243–246

Many deep-sea fisheries are also multispecies fisheries or have a large bycatch of noncommercial fish species.<sup>5</sup> As a result, they can be at least as devastating to nontarget species as to their intended targets.

#### **4) Deep-sea ecosystems are severely damaged by bottom trawling.**

Because so many bottom-dwelling deep-sea organisms are extremely slow growing, even a single trawl causes damage that cannot be reversed for decades or centuries.<sup>6</sup> This is particularly true on seamounts, which have an exceptionally high proportion of endemic species that are not found anywhere else.<sup>7</sup> Endemism on seamounts may range as high as 30 to 50 percent.<sup>8</sup> For endemic species, there are no sources for recolonization after a seamount is trawled, so endemism makes seamounts especially vulnerable.

#### **5) Scientific understanding is inadequate for sustainable deep-sea bottom-trawl fisheries.**

Attempts to regulate the exploitation of seamount species such as orange roughy have failed to prevent fishery collapse, because these species are very different from shallow-water species in longevity, growth rate, and rate of reproduction.<sup>9</sup> This means that methods of fish stock assessment and fisheries management models developed for shallow-water species are often inappropriate for deep-sea species.<sup>10</sup> In addition, fundamental data about deep-sea fish populations are often lacking, or are gathered long after the fish stock had been decimated. Such information for depleted stocks may not apply to populations in their more natural state.<sup>11</sup>

#### **6) Management and governance are inadequate for sustainable deep-sea bottom trawl fisheries.**

As deep-sea bottom-trawling fleets have expanded into the high seas, few regional fisheries management organizations (RFMOs) have the competence to regulate deep-sea fisheries, and fewer still have adopted effective regulatory measures.<sup>12</sup>

. In areas where a need for regulation arises due to the commencement of a deep-sea fishery, the rapidity with which bottom-trawl fleets deplete these populations is such that they may no longer exist once the international institutions are operational.<sup>13</sup>

---

<sup>5</sup> Piñeiro, C.G., and M.C.R. Bañón (2001). The deep-water fisheries exploited by Spanish fleets in the Northeast Atlantic: a review of the current status. *Fisheries Research* 51:311-320

<sup>6</sup> Freiwald, A., et al (2004). *Cold Water Coral Reefs: Out of sight- No longer out of mind*. UNEP World Conservation Monitoring Center, Cambridge (UK)

<sup>7</sup> Koslow et al 2001, see note 55

<sup>8</sup> Stone et al 2004, see note 11; estimate of 30-50% from Richer de Forges et al (2000). Diversity and endemism of the benthic seamount fauna in the southwest Pacific. *Nature* 405: 944-947

<sup>9</sup> Morato et al 2004, see note 43

<sup>10</sup> Boyer, D.C., et al (2001). The orange roughy fishery off Namibia: Lessons to be learned about managing a developing fishery. Pp205-211 in Paine, A.I.L., Pillar, S.C. and Crawford, R.J.M. (eds.). A decade of Namibian fisheries science. *South African Journal of Marine Science* 23

<sup>11</sup> Haedrich et al 2001, see note 46

<sup>12</sup> Gianni 2004, see note 10

<sup>13</sup> Molenaar, E.J. (2004). Unregulated Deep Sea Fisheries: A need for a Multi-Level Approach. in Unfinished Business: Deep Sea Fisheries and the Conservation of Marine Biodiversity Beyond National Jurisdiction, Special Issue of the *International Journal of Marine and Coastal Law* 19(3): 209-364