

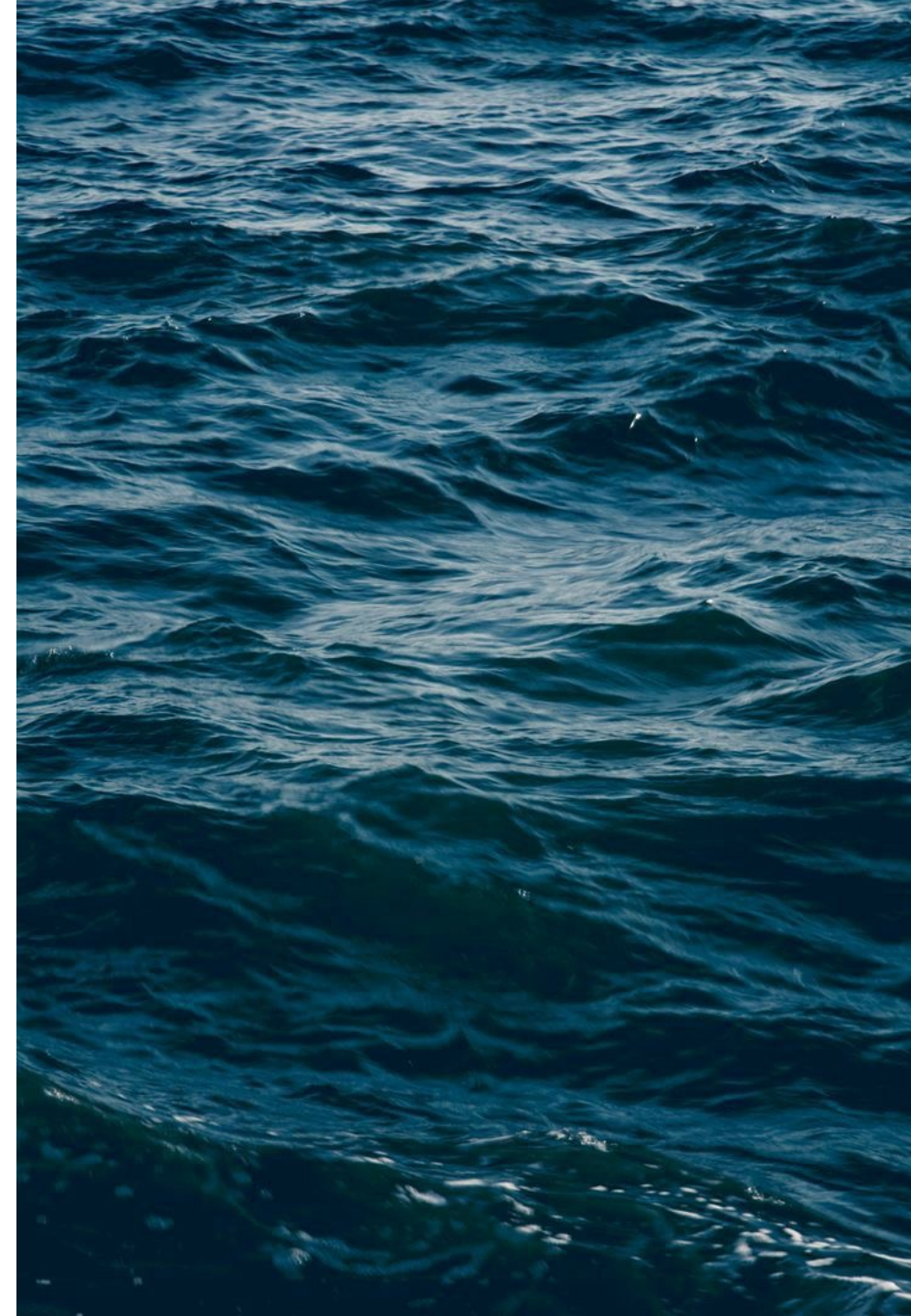
IE 482 – HUMANITARIAN LOGISTICS

EXXON VALDEX OIL SPILL

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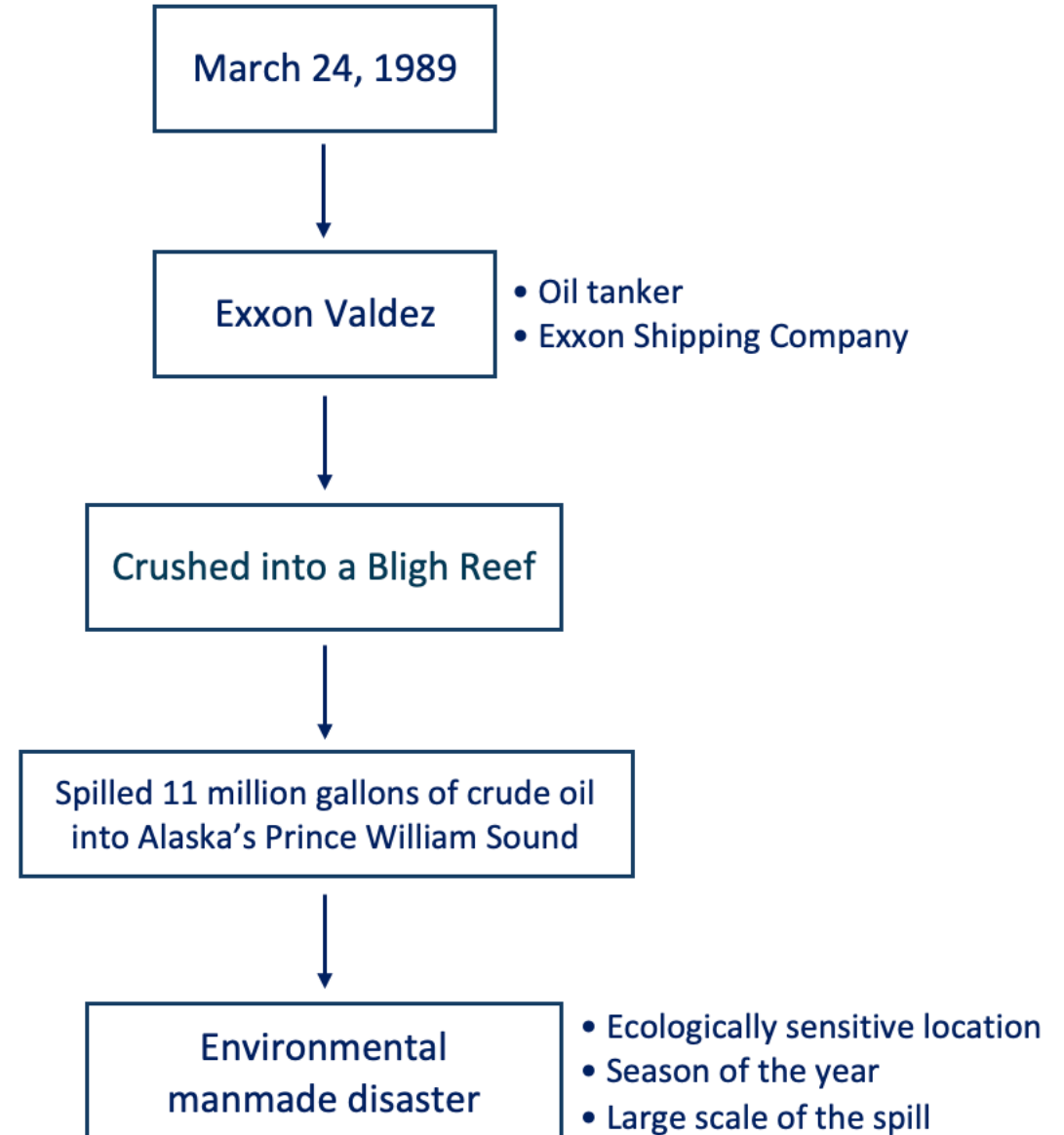
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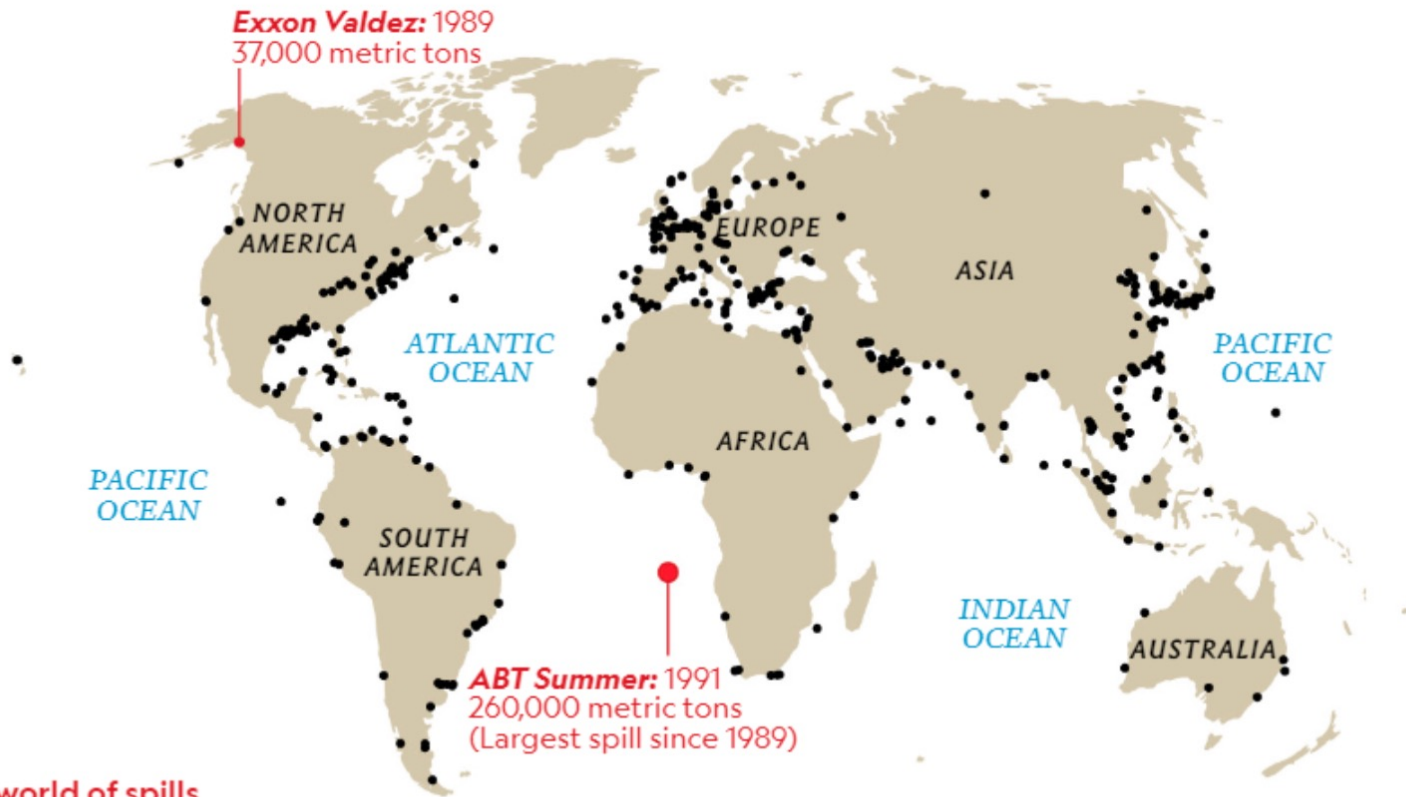


Overview



"One of the largest oil spill in the US,
and one of the largest oil spills in the world."





A world of spills

This map shows the 613 reported oil spills of seven metric tons or more from tankers and barges between 1989 and 2018. Since the 1980s, spills of 700 metric tons or more dropped from an average of nine a year to two.

JOHN KAPPLER, NG STAFF.
SOURCE: INTERNATIONAL OIL TANKER
OWNERS POLLUTION FEDERATION (ITOPF)

- The **worst spill in US history** until the Deepwater Horizon incident in 2010 in terms of **volume**
- The **worst globally** when assessing the **environmental damage**
- Initial attempts failed →
Oil slick spread →
Covering the coastline

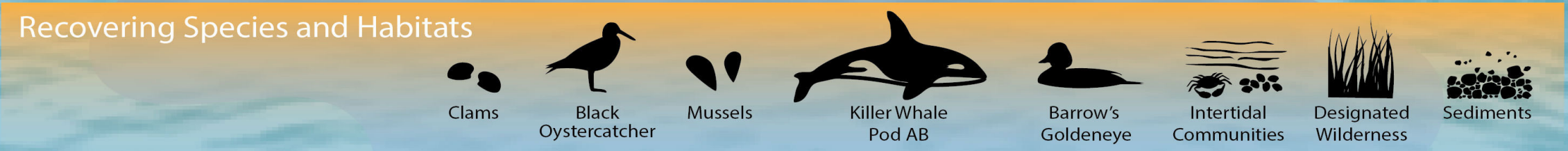
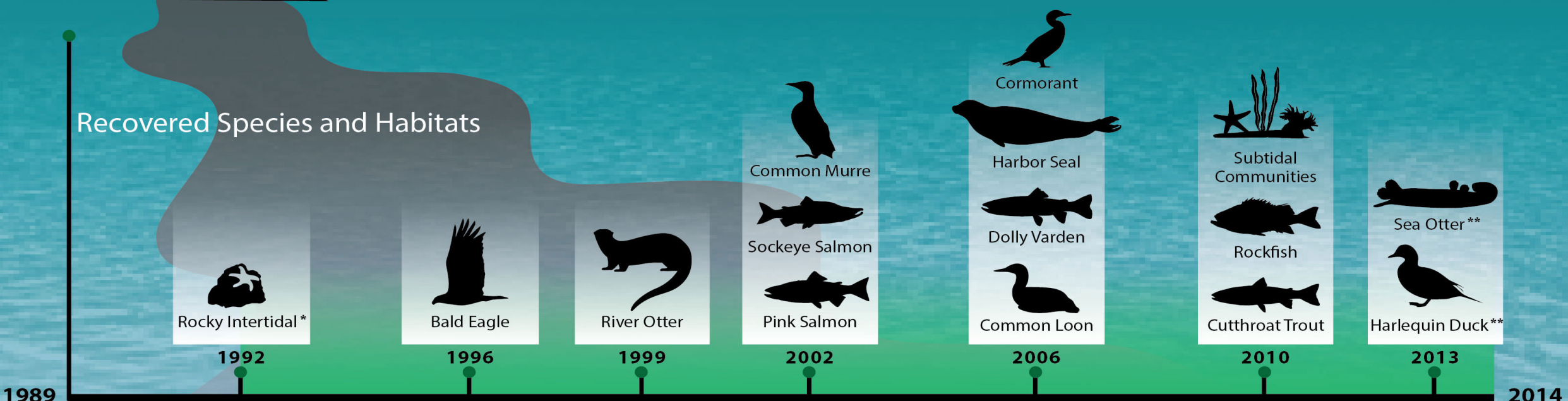
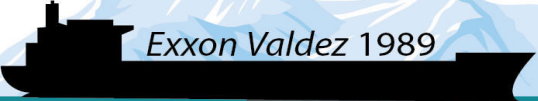
What were the impacts?

The spill affected more than 1,300 miles of shoreline, with immense impacts for fish and wildlife and their habitats, as well as for local industries and communities.



- An estimated 250,000 seabirds
- 2,800 sea otters
- 300 harbor seals
- 250 bald eagles
- 22 killer whales
- Billions of salmon and herring eggs

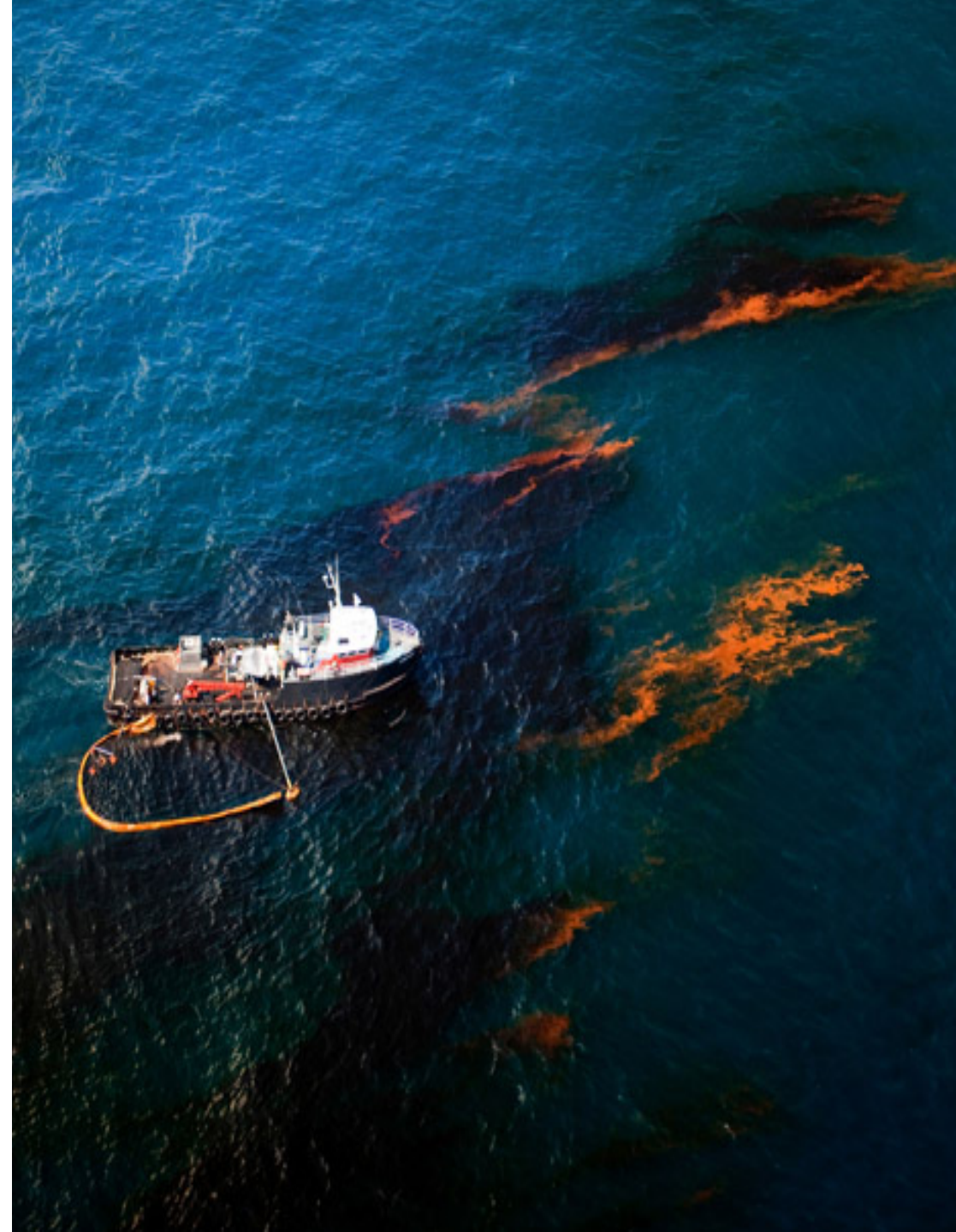
The timeline showing when natural resources officially "recovered".



* Data from NOAA
 ** Data from USGS
 Data were taken from the Exxon Valdez Oil Spill Trustee Council's 2010 Update on Injured Resources and Services (www.evostc.state.ak.us), U.S. Geological Survey, and National Oceanic and Atmospheric Administration's Office of Response and Restoration. This infographic was produced by the National Oceanic and Atmospheric Administration.

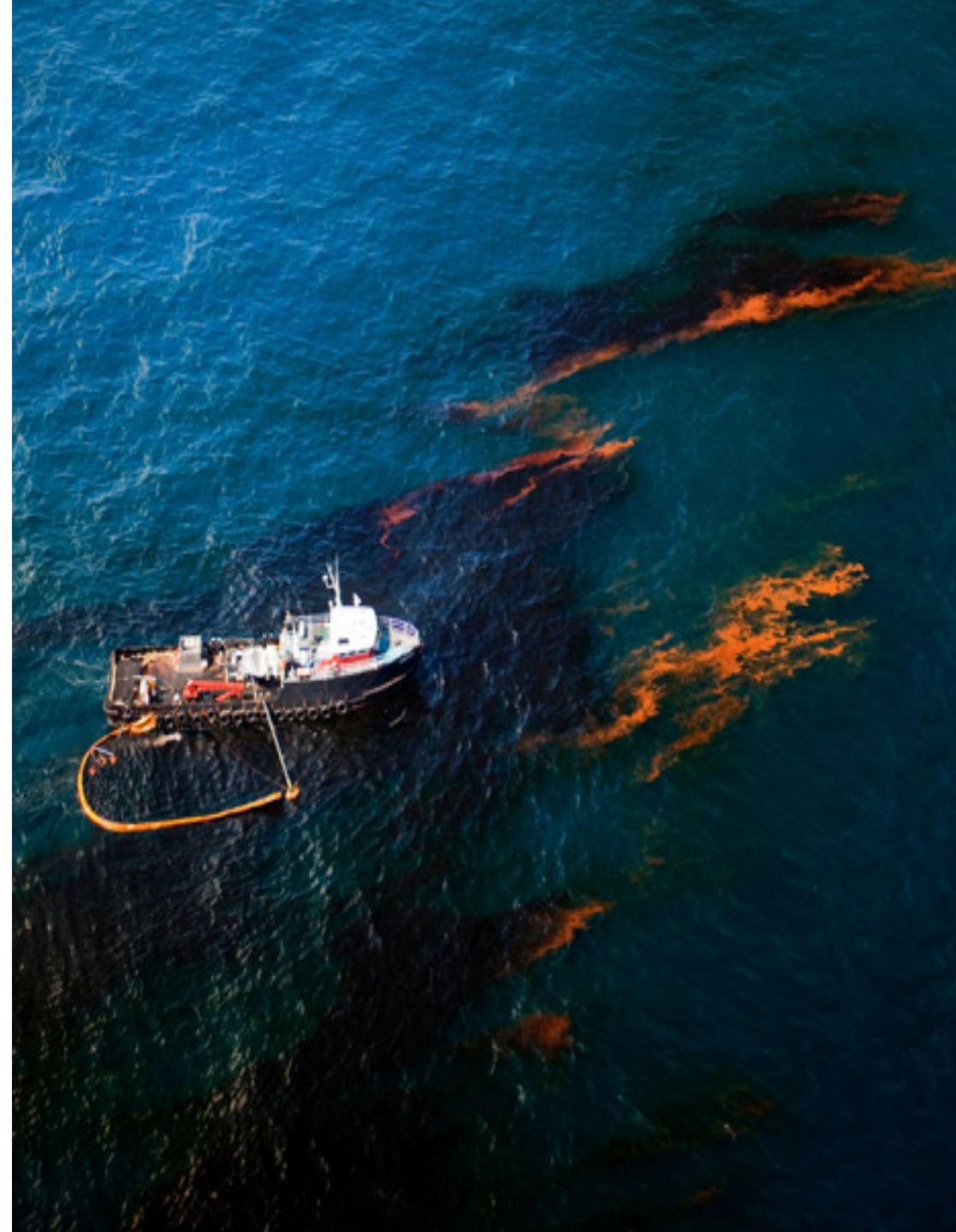
Disaster Management

- Neither of the parties, that was supposed to be in charge of the immediate response, was **not equipped** for such a **large scale** spill
- One of the parties, Alyeska, was supposed to have an **emergency response team**
- Alyeska's emergency response team had disbanded 8 years before the accident.



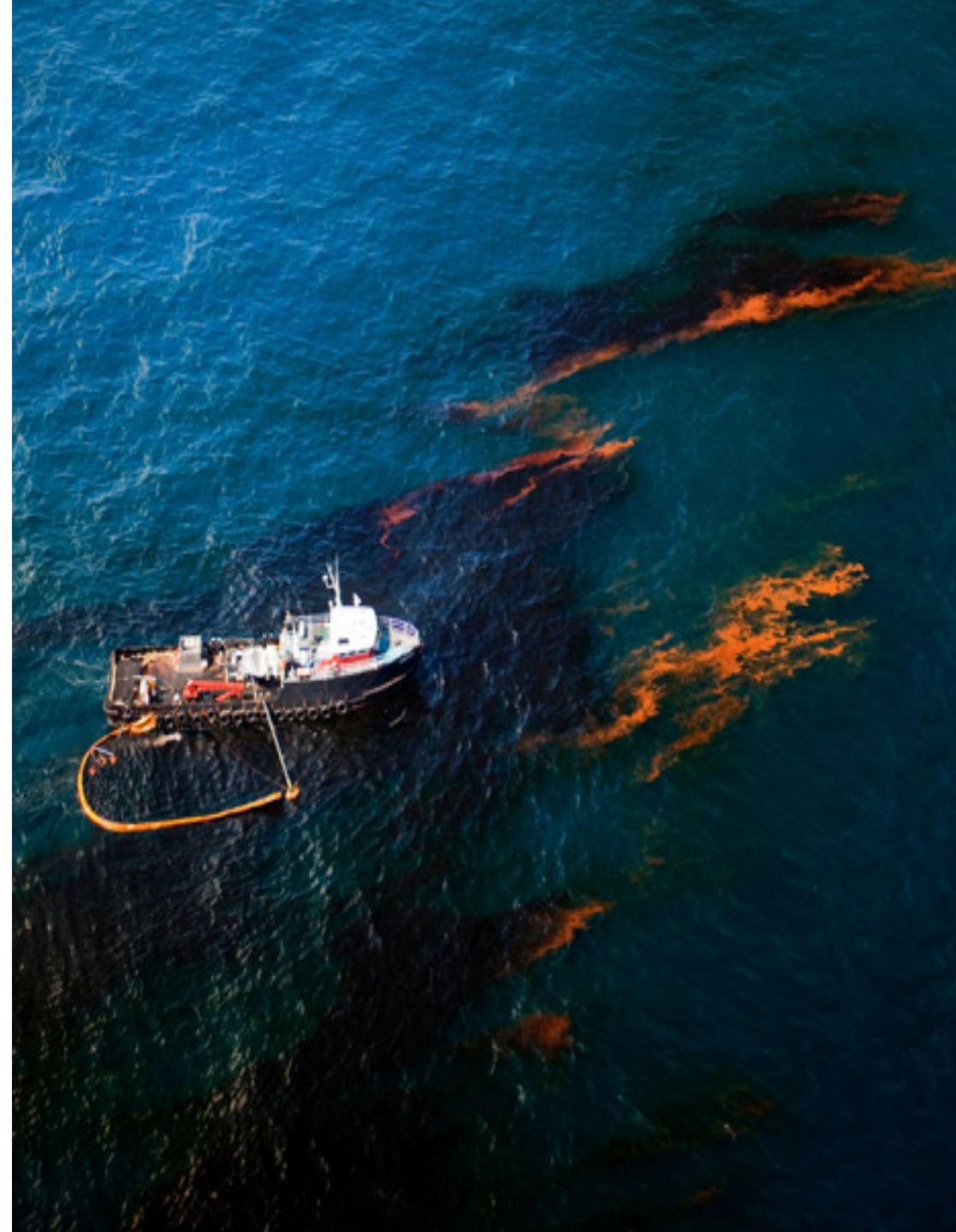
Disaster Management

- Alyeska acknowledged obligation for the **cleanup** and opened an **crisis communications center** in Valdez right after the spill.
- A **second operation center** in Anchorage was set up 15 minutes afterward.



Disaster Management

- National Oceanic and Atmospheric Administration (NOAA)
- Environmental Protection Agency (EPA)
- The coast guard, Exxon employees, federal responders
- Hubbs Marina Institute



- The coast guard, Exxon representatives, government responders and more than 11,000 Alaska residents worked to clean up the oil spill.
- EPA, Environmental Protection Agency, professionals in the use of experimental bioremediation innovations helped within the spill cleanup.
- National Oceanic and Atmospheric Administration was included in giving climate estimates, permitting the cleanup group to adjust their strategies to changing climate conditions.
- Professionals from the Hubbs Marine Institute in San Diego have established a facility to clean oil from otters.
- International Bird Research Center of Berkeley set up a center to clean and restore oil waterfowl

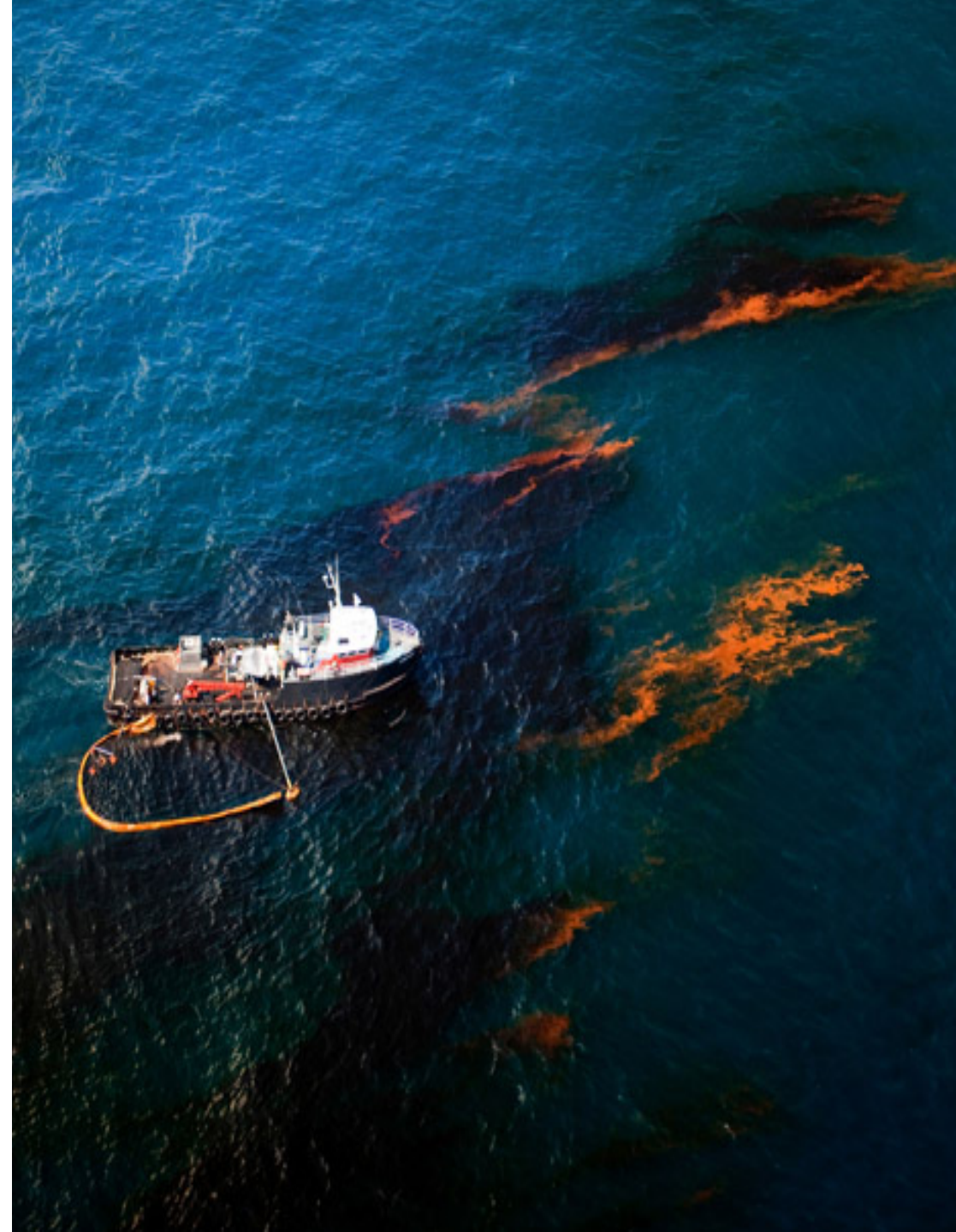
Disaster Management

- Exxon started its limited tests of chemical dispersants even though it was not clear if dispersant would cause more harm.
- Almost 800 miles of shoreline already covered with oil spill, 800 miles to be exact.
- Animals trapped in are rescued and cleaned once Exxon specialists washed oil covered beaches with hot water.
- Some areas excluded from cleanup as to later examined based on the effects of cleanup measures.
- While using high pressure and hot water in washing is effective in terms of removing the oil, it is later found out that this method caused even more damage in particular ecological area by terminating remaining plants and animals.

Disaster Management

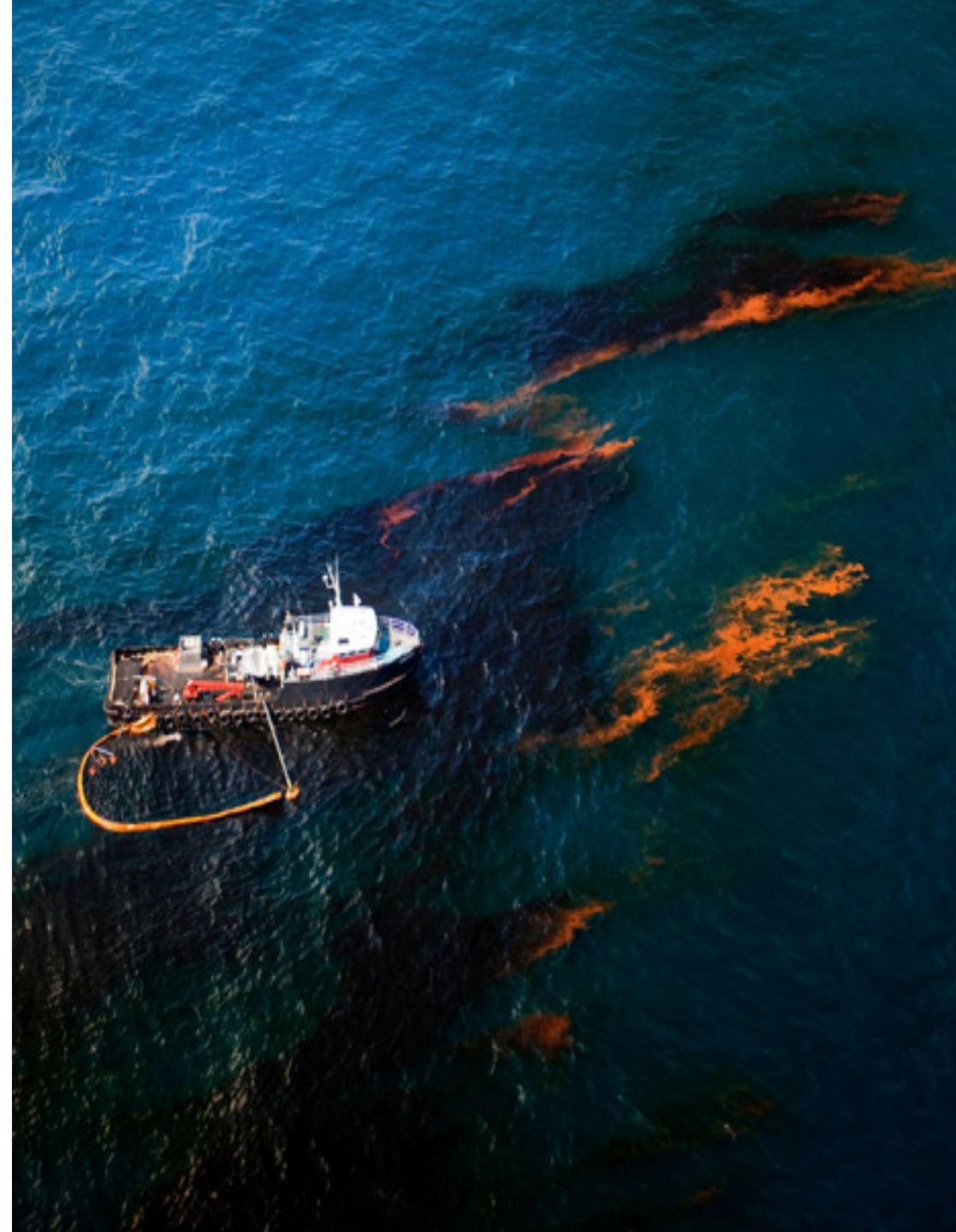
Disaster Management

- More than **two billion dollars** are spent for cleaning operations by Exxon
- There was no long term environmental damage
- But, for more than two decades, pockets of oil stayed beneath the surface of some of the beaches



Disaster Management

- Exxon became an industry leader in safety after the accident
- Millions of dollars were appointed for clean up research





What went wrong?

The main factors that caused the accident can be considered under four major root causes:

1. **Management of the workforce** on the ship was inadequately poor
2. **Maintenance** of the equipment did not meet the standards
3. **Necessary controls** did not take place
4. The government was inadequate in keeping up with the necessary **safety measures**

What went wrong?

Management of the Workforce

During the accident, the captain of the ship was **not in charge**, and instead, there was a Third Mate in control of the ship.

The captain was also under the **influence of alcohol** and asleep during the accident.

The Third Mate was **not adequate** for the job and hence **did not manage to maneuver**.

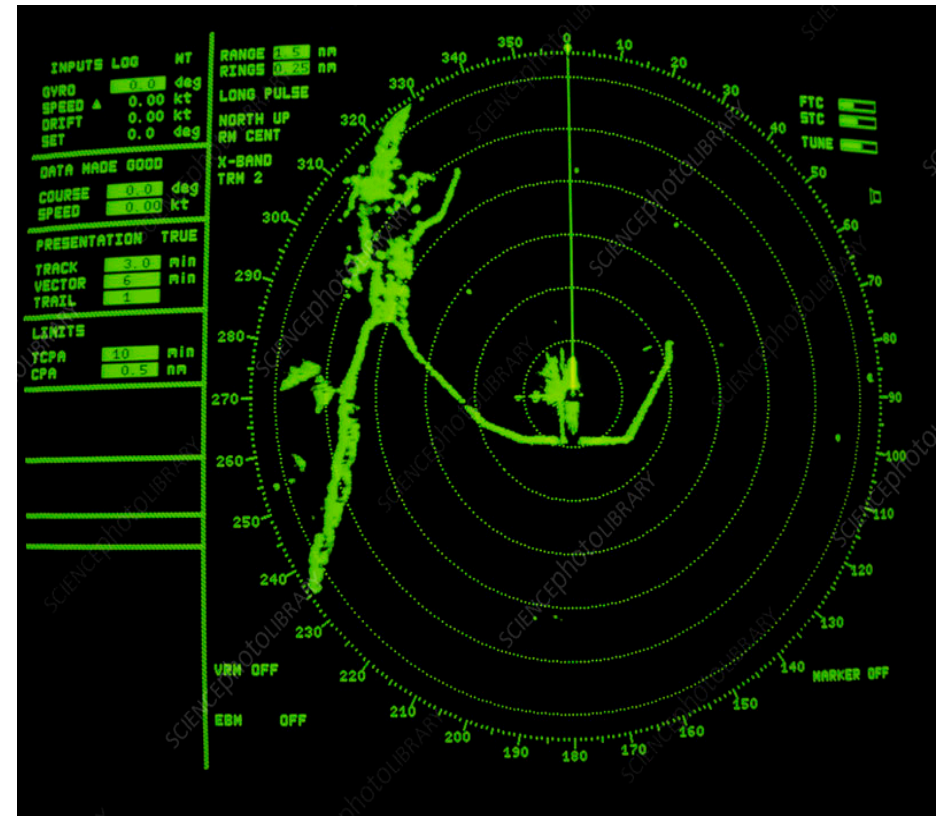
The **workforce** on the ship was **inadequate** to meet the ship's needs; hence, the Third Mate was also tired and sleep-deprived due to the **excessive workload**.



What went wrong?

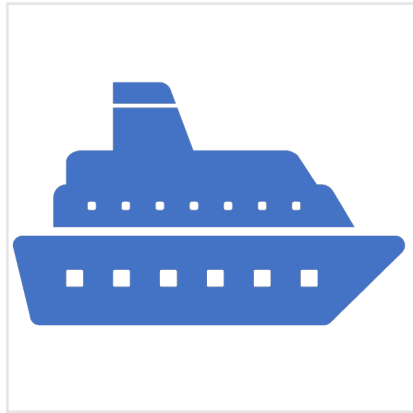
Insufficient Maintenance of the Equipment

- Even though the Third Mate was not capable of being in charge, it was not entirely his fault for being unable to manage the maneuver
- The **radar** had been **broken** for more than a year before the accident
- The ship was not equipped with **iceberg monitoring equipment** either. Despite having an agreement to equip the ships with the device, Exxon was not obeying the rules
- It later emerged that many companies, like Exxon, were not adhering to the terms of the agreement



What went wrong?

Lack of Control over the Ship



The ship was **not following** its "**normal route**" as it should have to prevent this kind of disaster from happening.



At first, ship traffic was strictly controlled by the Coast Guards. However, as time passed, the Coast Guards began to **relax** their **security measures** because waiting in lines or slowing down meant losing time and money.

What went wrong?

Governmental Issues



- Even though the government was eager to support **high-tech systems**, the **promise** was **not fulfilled** in the state of Alaska.
- Consequently, providing those improvements to the ships was left to the **judgment of the companies** that owned them.

What went wrong?

After the Accident

Exxon Valdez, along with governmental authorities, conducted the clean-up operation in the area.

Even though it can be considered a successful process, the initial response was inadequate and slow.

While the surface oil was cleaned up, the sub-surface oil remained, which was even more poisonous.

Though there were no human deaths due to the accident, four people died during the clean-up process.

It turned out that using high-pressure and hot water during the clean-up on the coasts was effective but harmed the ecological system even further.



Lessons Learned

"Cleaning oil spill is not possible"

- Exxon spent more than \$2 billion to cleanup actions but recovered less than 7% of the oil spill
- True action is preventing such incident and invest in **technologies** accordingly



Lessons Learned

Effects of the cleanup

- According to a study during the cleanup, **high pressure hot water** is effective for oil cleanup, but also **extremely dangerous** against the environment since it damages plants and animals
- These negative effects of this aggressive cleanup method guides us to develop **new cleanup methods**



Lessons Learned

Importance of Regulatory Reforms

- In response to this disaster, **The Oil Pollution Act of 1990 (OPA90)** is enacted which impose strict regulations on oil transportation
- OPA90 requires twin tug escorts, two licensed mariners on the bridge, double hulls for vessels and some compensation mechanisms for oil spill etc.



Lessons Learned

"Liability means safety"

- Exxon Valdez spill highlighted the importance of **corporate accountability** in preventing environmental disasters
- ExxonMobil faced **public backlash**, **financial penalties** and thousands of **legal challenges**

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