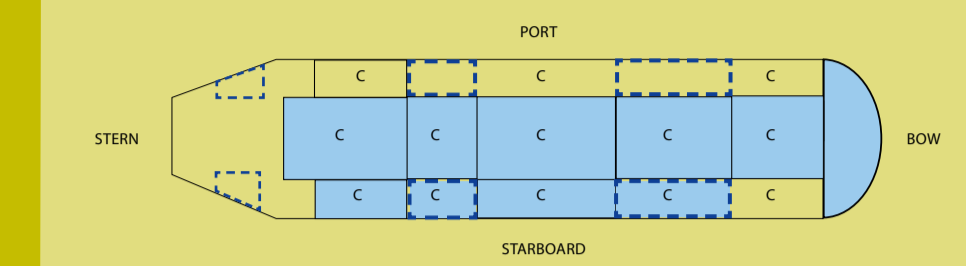


Exxon Valdez

the most expensive oil spill in history

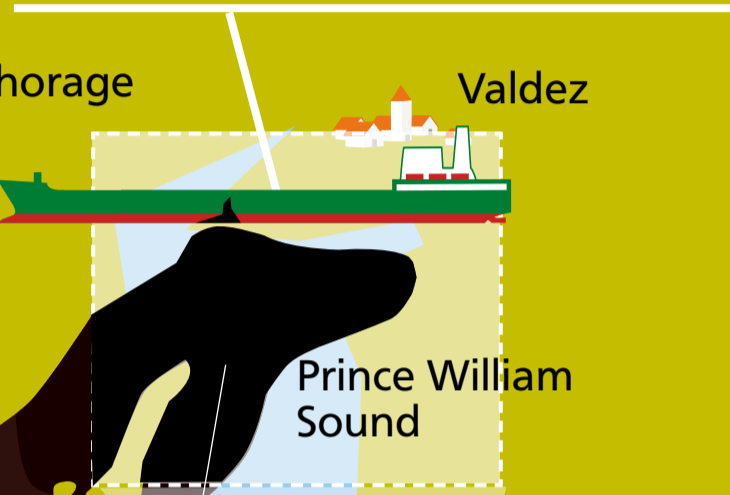
The incident

- On the evening of 24 March 1989, the supertanker the *Exxon Valdez* left the Valdez oil terminal (Alaska, USA) for Long Beach (California, USA), after having loaded 180,000 tonnes of crude oil. During the night, the vessel grounded on Bligh Reef.
- It gradually became apparent over a number of days that the accident had damaged several tanks and caused a spill of 38,500 tonnes of oil.
- The *Exxon Valdez* was emptied of her cargo and then towed away and repaired at a shipyard. She was then rebaptised *Exxon Mediterranean*, then *Sea River Mediterranean* after being sold to another company.



Cause of accident	Pollutant	Quantity transported	Quantity spilled	Waste collected	Length of coastline polluted
Grounding	Crude oil	180,000 t	38,500 t	25,000 t	1,700 km

24 March 1989 Exxon Valdez grounded on Bligh reef



Response

- The Governor of Alaska declared the situation an emergency and placed responsibility for clean-up in the hands of the oil group Exxon. The company acknowledged its responsibility and stated that it would take full charge of the organisation of clean-up and cover the costs.
- Floating booms and skimmer barges were rapidly deployed. To prevent the whole cargo from spilling into the sea, the oil within the *Exxon Valdez* was rapidly transferred onto the tanker *Exxon Bâton-Rouge*.
- In two months, 7,000 km² of drifting slicks polluted 800 km of coastline (1,700 km including all the inlets and islets). Tens of thousands of professionals and volunteers, with unprecedented means (1,400 vessels, 85 helicopters), were deployed to save seabirds and mammals and to clean up the shoreline, beach by beach.
- The main response techniques used were manual and mechanical clean-up, pumping, washing (cold water low pressure washing and high pressure washing with hot water and washing agents) and bioremediation.



Removing the cargo from the Exxon Valdez © Photo courtesy of the EVOSTC
Cleanup by flooding with cold water © Photo courtesy of the EVOSTC

Impact on fauna

- Between 3,700 and 5,800 mammals of 9 different species were affected by the pollution. 300 cases of direct mortality of seals were reported, mainly caused by breathing in volatile fractions of the oil. Some 2,800 otters died of smothering, ingestion of oil and hypothermia. 14 of the 36 killer whales counted in the sound before the spill disappeared between 1989 and 1990. Considerable efforts were made to direct deer and bears towards unpolluted areas to prevent them from consuming contaminated substances.
- No less than 71 species of seabirds were affected. Guillemots were especially heavily hit, with some 22,000 corpses collected. The total number of seabirds killed by the oil spill is estimated at between 250,000 and 350,000. The bald eagle, emblem of the United States of America, was no exception: 153 corpses were recovered. Some 1,630 alive oiled birds were sent to 4 rehabilitation centres and 837 of them were released after treatment. The cost of this operation was estimated at \$25.3 M (over \$30,000 per saved bird).
- A very high invertebrate mortality rate was recorded around the oil tanker during the 2 weeks following the spill: almost all crustaceans disappeared and other invertebrates became rare. Heavy losses were incurred by certain species living on the foreshore, in particular winkles and limpets. Several thousand dead fish were observed during the same period, a relatively low impact in comparison to other groups. However, few fish escaped non-lethal effects, such as erosion of fins and/or the accumulation of oil in the gills and reproductive organs.



A partially oiled sea lion © Photo courtesy of the EVOSTC
Aerial view of the pollution caused by the Exxon Valdez © Cédre

Impact on fishing

- Fishing in Alaska involves some 12,000 fishermen. Landings in the fishing harbours of Prince William Sound reached \$174 M in 1987, almost 6% of the American market.
- The herring fishing season opens at the beginning of April and represents an annual sum of around \$14 M. The pink salmon fishing season opens in June/July and brings in some \$33 M on a yearly basis.
- Immediately after the spill, the Alaskan Governor issued a fishing ban for Prince William Sound to prevent cutting back the populations of fish which had survived the pollution. 4,000 jobs in the fishing industry were affected.
- A risk assessment study on consumer health was carried out based on the analysis of hundreds of samples of fish and molluscs. The risk of cancer connected to the consumption of sea produce from areas affected by the oil spill appeared to be negligible. This data did not however satisfy everyone: the year following the spill, a study conducted to assess changes in eating habits within the native population reported a significant decrease (from 31% to 77%) in the consumption of seafood in 10 of the 15 villages studied. During the second and third year following the spill, subsistence fishing resumed in all but a few families.

Impact on humans

- One year after the spill, a study assessed the frequency of psychiatric symptoms and the association of these symptoms with the level of exposure to the oil spill and to clean-up operations.
- Exposure was significantly associated with the occurrence of general anxiety, post-traumatic stress syndrome and depression.
- These results showed that the hypothesis of a link between the oil spill and an increase in psychiatric problems within the population living in the affected areas was plausible. Women and natives of the polluted area seemed to be the most at risk.

Impact follow-up

- Prince William Sound is lined with a rugged coastline punctuated with numerous fjords, islands and reefs. The affected area is considered to be ecologically sensitive. The *Exxon Valdez* Oil Spill Trustee Council (EVOSTC), created the summer following the spill, aimed to contract and coordinate environmental follow-up, impact assessment and restoration of damages inflicted on the environment.
- In 1994, it adopted a 5-fold plan of action:
 - surveillance of the main resources and species affected
 - restoration of sites
 - protection of habitats
 - management of a long term reserve fund
 - scientific coordination, administration and communication.
- A large number of studies were thus conducted within this framework. Only seals, killer whales and otters were studied on a long term basis, as the state of their populations was considered a major concern. The year of the incident, the reproduction of bald eagles recorded a failure rate of 85% for heavily or moderately polluted areas, compared to 55% for lightly polluted to unpolluted areas. This rate returned to normal in 1990. It finally became evident that the spill had not significantly affected the population. As for species of commercial value, studies mainly concentrated on herring and pink salmon, highlighting a drastic fall in the return of adult salmon in 1990 and in the herring population in 1993. The results of these studies are available on the EVOS website.



Bird oiled by the Exxon Valdez spill © EVOSTC photo by John Hyde

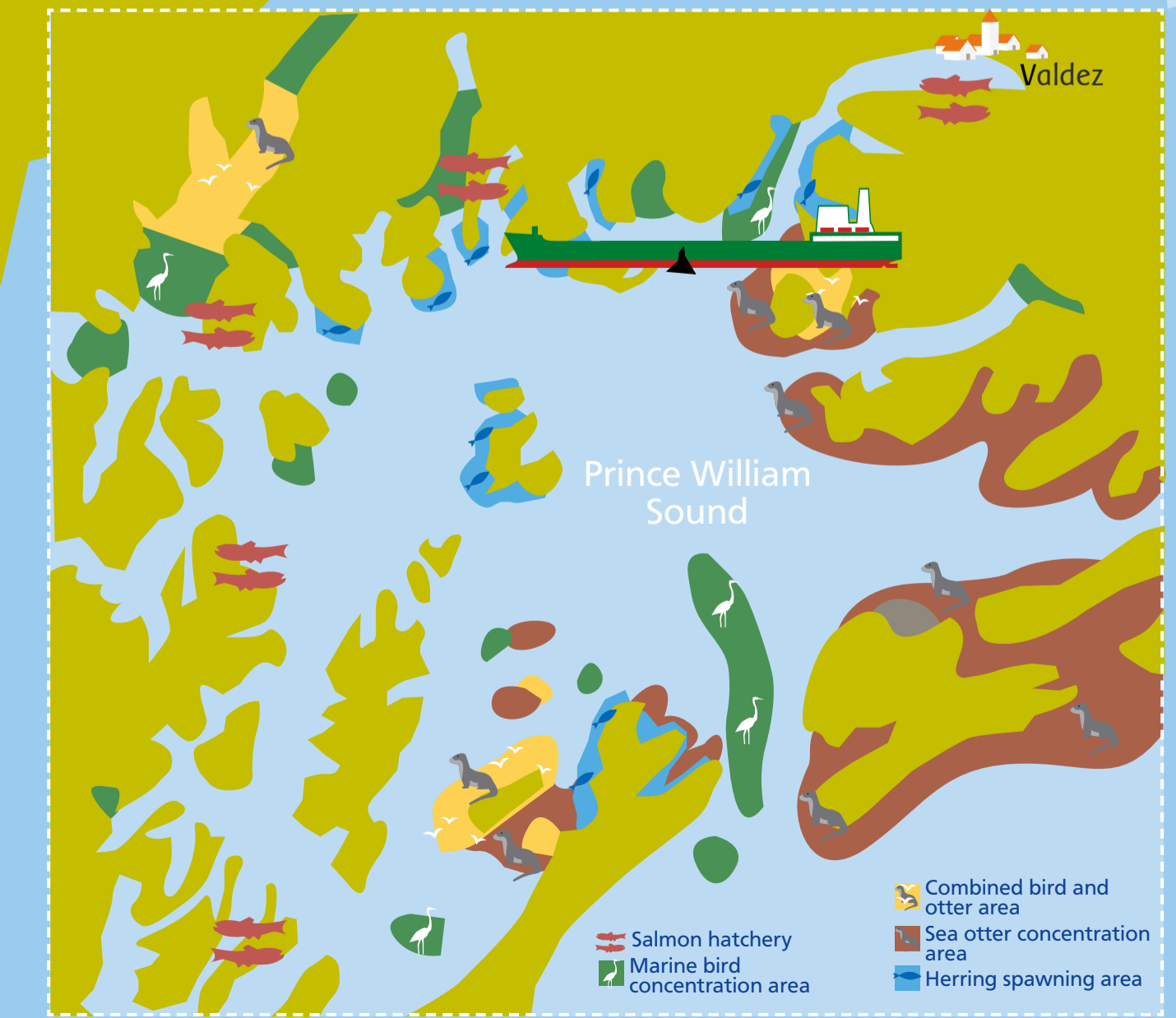
Cost of the pollution

- In 1991, an agreement between the federal government, the State of Alaska and Exxon established:
 - a criminal plea agreement of \$150 M including the recognition of an in-kind contribution from Exxon to the value of \$125 M for clean-up operations
 - \$100 M for the repair of damage caused by the spill, shared equally between the federal government and the State of Alaska
 - a civil settlement to the value of \$900 M payable in 10 annual installments from the company's civil liability to contribute to studies and the restoration of the environment. This settlement included a "reopener window" between 1 September 2002 and 1 September 2006 during which the federal government and the State of Alaska could claim an extra \$100 M if any unanticipated damages not characterised in the 1991 settlement were observed before this deadline. On 1 June 2006, the U.S. Department of Justice and the State of Alaska Department of Law took the first step in presenting a claim under this provision for the clean-up of remaining oil at an estimated cost of \$92 M.
- On top of these amounts, Exxon was charged with \$5 B of punitive damages, by a court sentence in 1994. This fine, disputed by the group, was reduced to \$4 B in 2002, then later increased to \$4.5 B. The case is still pending. Furthermore, 2,000 fishermen received or are due to receive an average compensation sum of \$10,700 from Exxon for the decline in salmon fishing caused by the spill.
- Although this spill is listed as the 26th largest spill due to maritime transport by shipping in terms of tonnage, it is by far the spill which has attracted the most media attention and has become the most expensive oil spill in history. The contribution of Exxon to studies and to the restoration of the environment alone exceeds the total sum paid by Amoco for the Amoco Cadiz oil spill.

CRIMINAL PLEA AGREEMENT			CRIMINAL RESTITUTION		CIVIL SETTLEMENT	
\$150 M.			\$100 M.		\$900 M.	
\$125 M.	\$13 M.	\$12 M.	\$50 M.	\$50 M.	\$213.1 M.	\$686.9 M.
Remitted in recognition of Exxon's cooperation in cleaning up the spill	Victims of Crime Fund	North American Wetlands Conservation Fund	State Government	Federal Government	Reimbursement to Federal and State governments for damage assessment and spill response	Exxon Valdez Oil Spill Trustee Council

Consequences

- The United States was not party to international conventions on civil liability and compensation for oil spills. The *Exxon Valdez* incident did not cause them to review this policy but rather generated a series of national measures, culminating in 1990 in the passing of the Oil Pollution Act (OPA).
- This act contains two main measures. One imposes the phase-in of the obligation of double hulls for vessels navigating in US national waters, with the resulting phase-out of single hull vessels. The other introduces a national trust fund, financed by mandatory levies for oil transporters and a legislative tool which guarantees clean-up and compensation for areas affected by an oil spill. The assessment of damages can take different forms, left to the judgement of the parties involved, as long as the operations are conducted "appropriately".
- Compensation can be provided for the costs generated by the effort to reduce impacts and their follow-up. Unlike international conventions, this legislation includes the possibility of compensation for damages to natural resources. The system retains the possibility for each State to assert their own complementary legislation, such as the integration of the charterer, responsible for the choice of vessel, in the list of payers.



100 km