

Development of aquaculture of Atlantic halibut a historical perspective

Production of juveniles

DIVERSIFY

ATLANTIC HALIBUT KNOW-HOW TRANSFER WORKSHOP

11-12 th September 2018

Hjelmeland, Ryfylke, Norway

Ólafur Halldórsson

Spraka ehf

Iceland

The Beginning

- In 1980 Victor Öiestad and others fertilized halibut eggs and the first larvae hatched and survived well into the first feeding stage at the Flödevigen Research Station, Norway.
- In 1985 the first two halibut juveniles were produced at the Austevoll Research Station, Norway

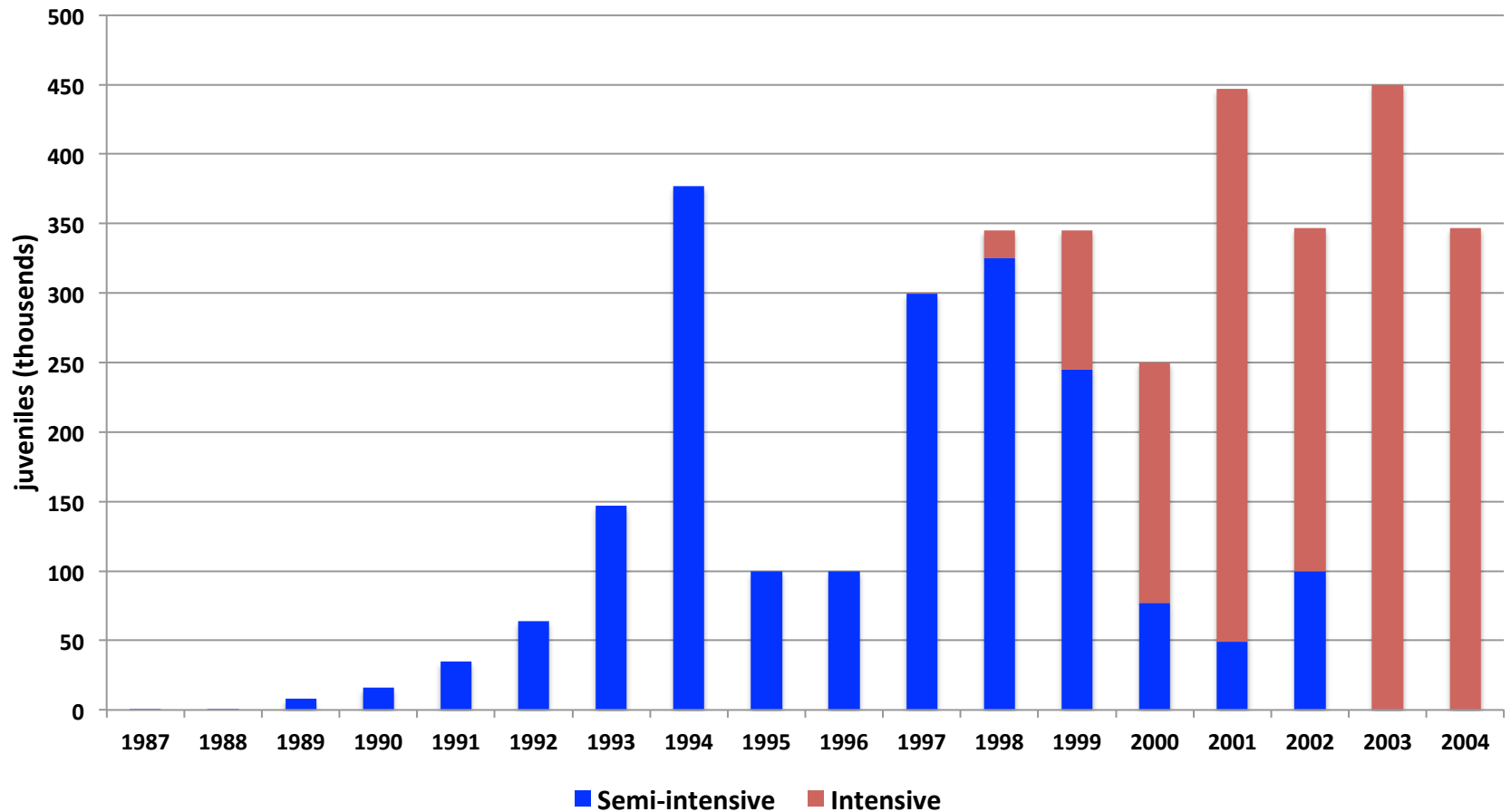
Halibut farming as an industry – the entrepreneurs

- Already in the 1980 companies in Norway started to develop methods for mass production of halibut juveniles
- Examples are Stolt Sea Farm, AMY, LMC, Norsk Hydro, TMY, Lofilab, and Breivik Seafarm.
- In Scotland Otter Ferry started early 1990 and in Iceland Fiskeldi Eyjafjarðar hf (FISKEY) was established in 1987

Juvenile production in Norway

semi-intensive vs. intensive

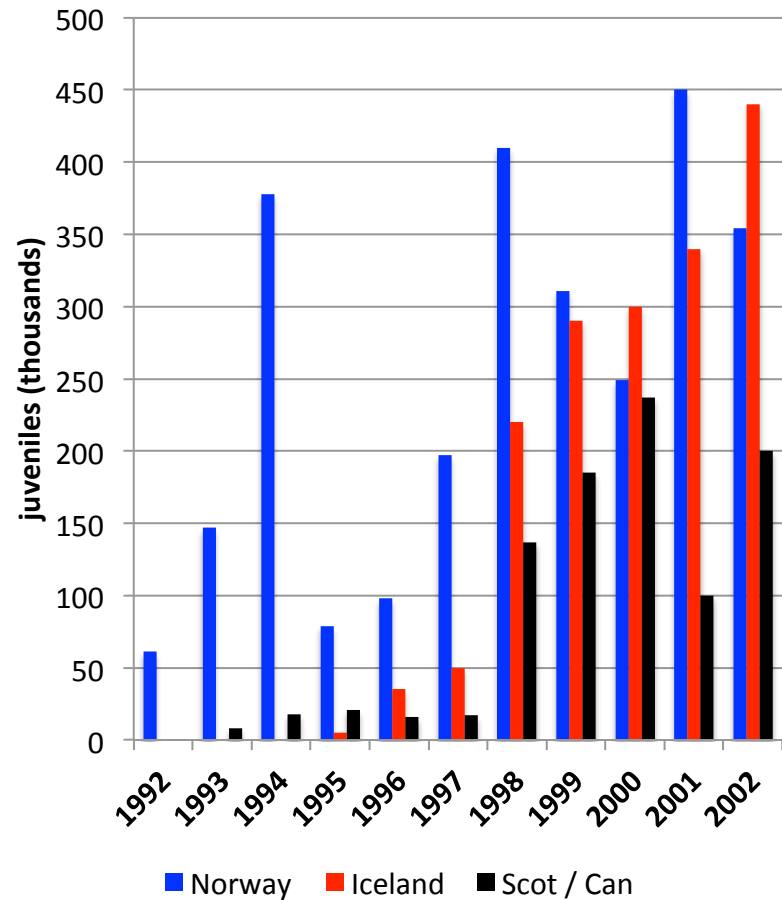
T. Harboe and A. Mangor-Jensen 2006



Juvenile production in the 1990's

F. Chr. Skjennum 2006 and FISKEY 2003

- Norway 10-15 hatcheries
- Canada 2-3 hatcheries
- Scotland 2-3 hatcheries
- Iceland 1 hatchery
- Research institutes
 - Austevoll Research St.
 - Sunndalsöra Re. St.
 - Univ. Trond / Sintef
 - Univ. Bergen
 - Ernæringsinst. Bergen
 - Sea Fish Industry Auth.
 - Ocean Sci. Center NF
 - MRI Iceland



Important milestones in the FISKEY intensive production

- Production of high quality Artemia from 1996/1997
- Continuous spawning from 1997/1998
- Better knowledge of larvae requirements
- Development of effective work routines 1993-2000
 - light and temperature regimes, *larval behaviour*
 - flow rates, *tank environment*
 - feeding strategies, *growth and survival*
 - installation of cleaning arms, *tank environment*

Cooperation, Norway/Iceland

- transfer of knowledge and technology from Norway to Iceland
 - biology, the development from egg to juvenile
 - stripping and fertilization of eggs
 - special designed tanks for egg and larvae incubation
- These factors together with others gave FISKEY a solid platform to start the halibut hatchery in 1988 and to develop future protocols

Way of transfer:

- projects
- mutual visits, Res. St. and private companies
- scientific papers
- conferences, Marine arter i oppdrett in the 1990's (Farming of marine species)

Cooperation Norway/Iceland

Use of the FISKEY production protocol in Norway

- TMY, cod hatchery in Tromsø, 2003
- Marine Harvest, CCN cod hatchery, 2004-2008
- Sterling White Halibut (MH) Rörvik, halibut hatchery, from 2004
- Farming of Atlantic Halibut is an excellent example of fruitful Nordic cooperation with participation from Norway, Sweden and Iceland
- Thank you