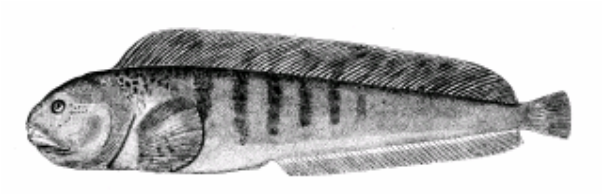

Last Revised: December 2006

Atlantic Wolffish

by

Charles Keith

Distribution, Biology and Management

Atlantic wolffish (*Anarhichas lupus*) are distributed on both sides of the North Atlantic Ocean. In the northwest Atlantic the species occurs from Davis Straits off of Greenland to Cape Cod and sometimes in southern New England and New Jersey waters (Collette and MacPhee 2002). In the Georges Bank-Gulf of Maine region (Figure 20.1), abundance is highest in the southwestern portion at depths of 80 to 120 m, but wolffish are also found in waters from 40 to 240 m (Nelson and Ross 1992).

Atlantic wolffish are sedentary and mostly solitary in habit, except during mating. They seem to prefer complex benthic habitats with large stones and rocks which provide shelter (Pavlov and Novikov 1993). They do not display territorial behavior (Pavlov and Novikov 1993). The diet of Gulf of Maine Georges Bank wolffish consists primarily of bivalves, gastropods, decapods and echinoderms.

Little is known about the biology, migration patterns or seasonal movements of Atlantic wolffish in the Gulf of Maine Georges Bank region. Peak spawning period is believed to occur from September to October (Collette and MacPhee 2002). Laboratory studies indicate that wolffish may be found in a ripe condition throughout most of the year and spawning may be correlated with photoperiod (Johannessen et al. 1993, Pavlov and Moksness 1994). There is weak indication of a deep to shallow migration between the fall and spring seasons (Nelson and Ross 1992).

In the Gulf of Maine Georges Bank region individuals may attain lengths of 150 cm and weights of 18 kg (Collette and MacPhee 2002). In the western Atlantic most individuals mature by age 5-6 when they reach approximately 47 cm total length (Nelson and Ross 1992, Templeman 1986). However, size at first maturity varies regionally; northern fish mature at smaller sizes than faster growing southern fish. Atlantic wolffish have lower fecundity compared to their relatives, the spotted wolffish (*Anarhichas minor*) and the northern wolffish (*Anarhichas*

denticulus). Fecundity is related to fish size and body mass. A 60 cm female produces approximately 5,000 eggs while an 80-90 cm female will lay 12,000 eggs (Falk-Petersen and Hansen 1991).

At present, there is no fishery management plan for Atlantic wolffish in US waters.

The Fishery

Wolffish are taken primarily as bycatch in the Georges Bank Gulf of Maine otter trawl fisheries. During 2001 to 2005 otter trawl gear accounted for 75% to 98% of the wolffish landings, with gill nets and longlines accounting for almost all of the remaining landings. Recreational catches are insignificant.

Total USA commercial landings of Atlantic wolffish increased from 270 mt in 1970 to near 1,200 mt in 1983, but subsequently have continuously declined and reached a recent low of 118 mt in 2005 (Table 20.1, Figure 20.2). Canadian landings have been insignificant in recent years.

Research Vessel Survey Indices

Relative biomass indices of Atlantic wolffish in NEFSC spring and fall bottom trawl surveys have declined during the last two decades (Figure 20.3). In both survey series, indices were relatively high and stable during the 1970's but declined afterward. Since 2000, the indices have been at or near record low levels (Figure 20.3).

Summary

NEFSC spring and fall survey biomass indices of Atlantic wolffish indicate the resource is at an extremely, low level. Commercial landings are also at record lows. At present, there are no biological reference points for Atlantic wolffish in US waters.

Table 13.1 Recreational and commercial landings of Atlantic wolffish (thousand metric tons).

Category	1986-95 Average	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
U. S. Recreational	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Commercial											
United States	0.6	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1
Canada	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Other	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Nominal Catch	0.6	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1

For further information

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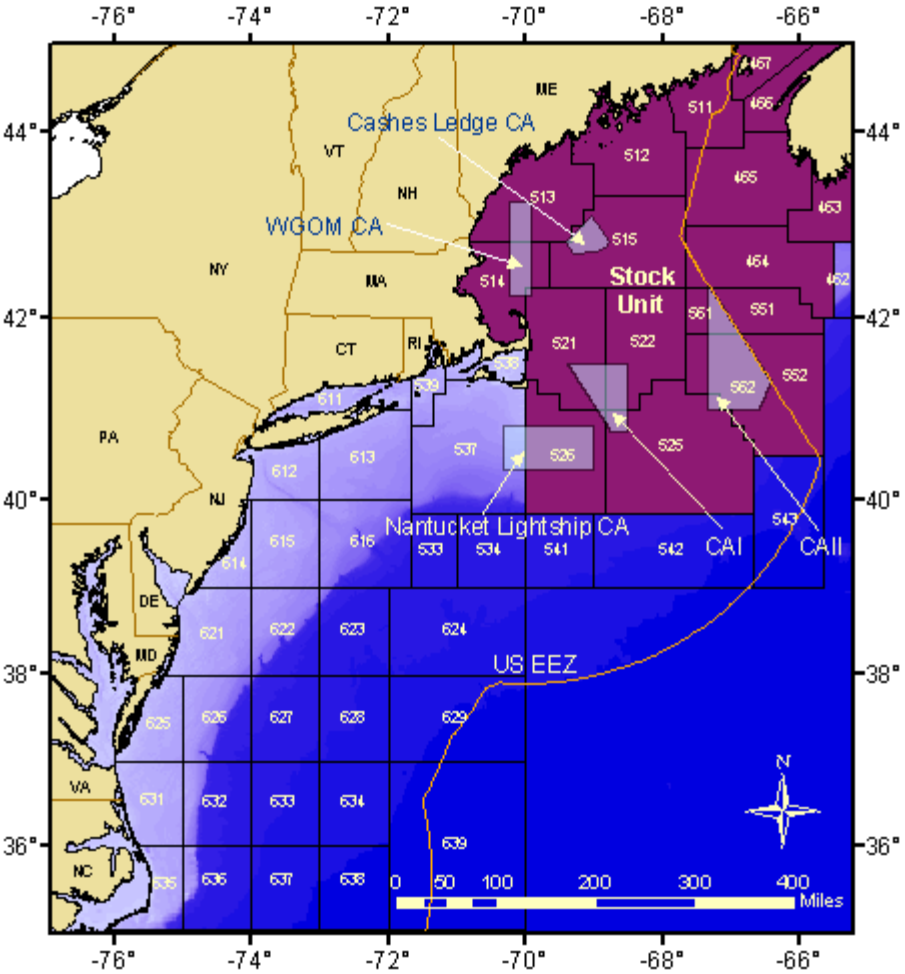

Figure 20.1. Statistical areas used to define the Atlantic wolffish stock.

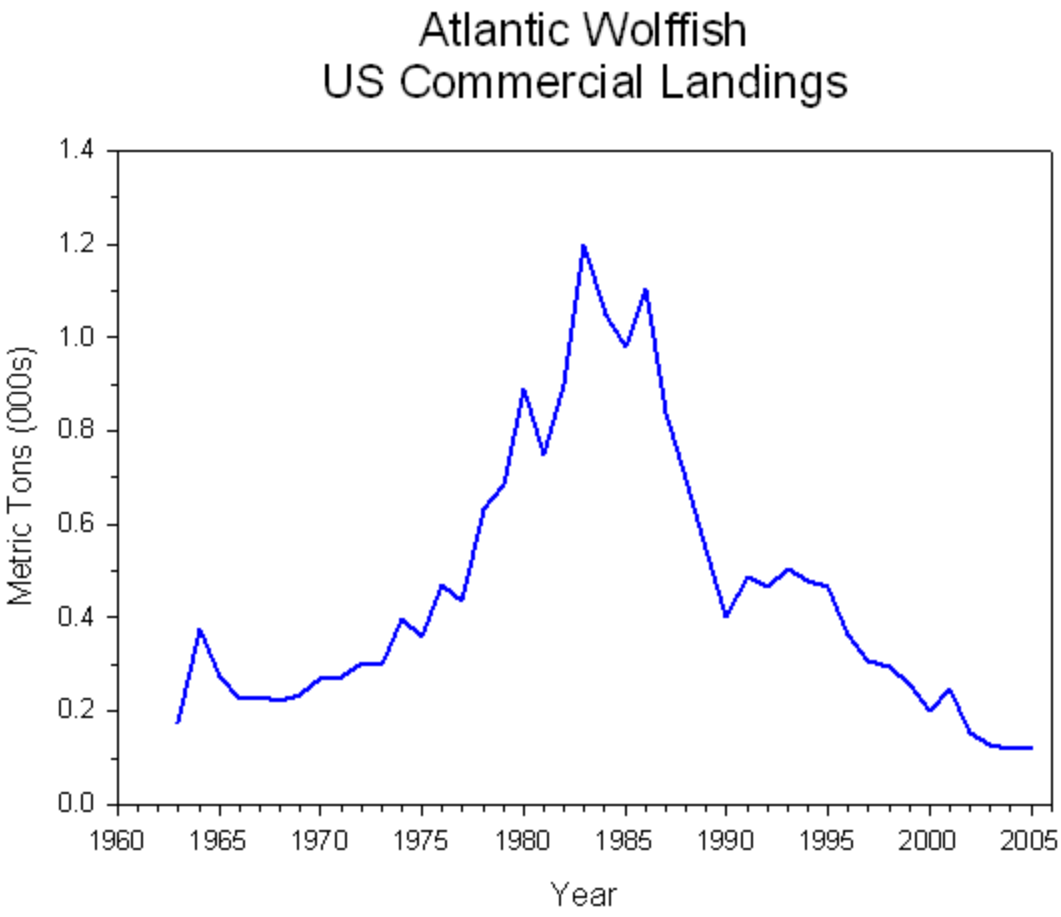

Figure 20.2. US commercial landings of Atlantic wolffish, 1963-2005.

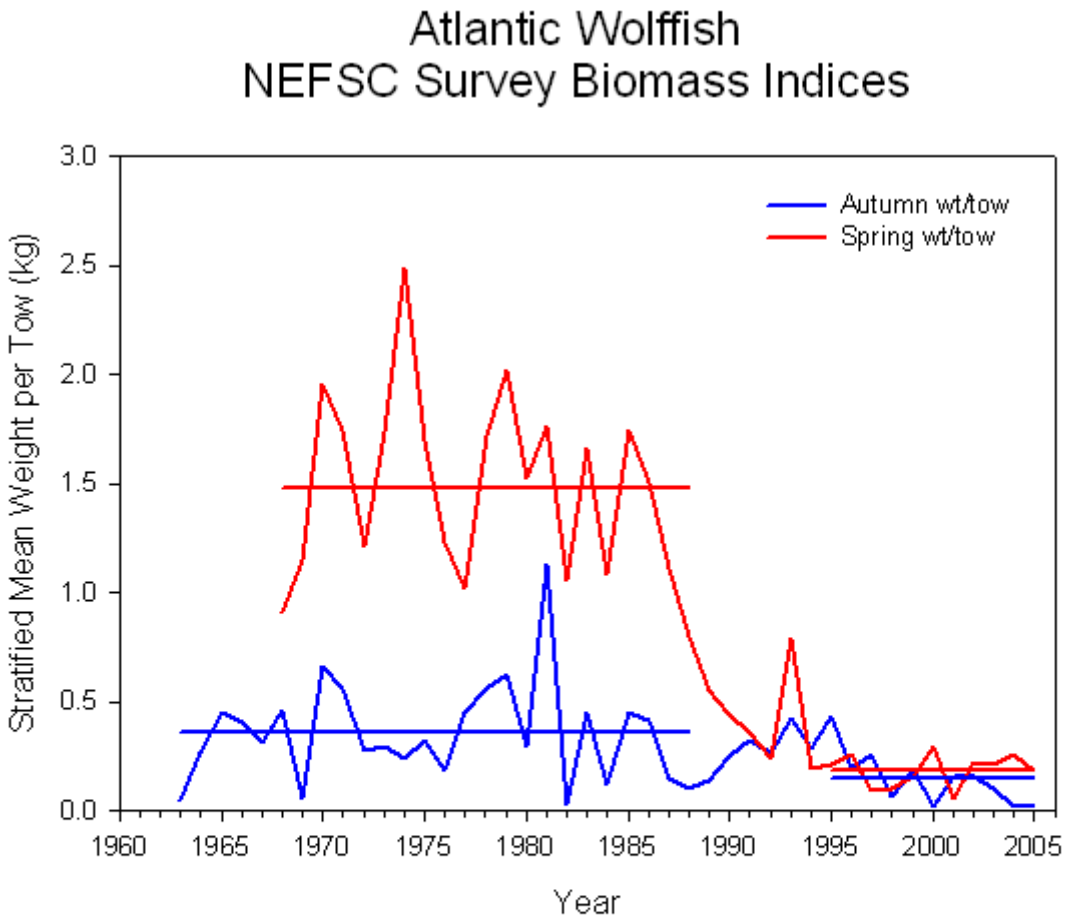

Figure 20.3. Atlantic wolffish spring and autumn biomass indices from the NEFSC bottom trawl surveys. The horizontal lines indicate the average spring biomass index during 1968-1988 and 1995-2005, and the average autumn biomass index during 1963-1988 and 1995-2005.