



**Danish Report to be submitted in line  
with Article 9 of Council Regulation (EC)  
No 1100/2007 of 18 September 2007  
establishing measures for the recovery of  
the stock of European eel**

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## **0. Introduction and summary**

This report follows the 8 questions of the Commission Guidance Document for the production of Reports to be submitted in line with Article 9 in the eel Regulation (1100/2007). The report is a collaboration of the National Institute of Aquatic Resources (DTU Aqua), at the Technical University of Denmark and the Ministry of Food, Agriculture and Fisheries, the Danish AgriFish Agency (former Danish Directorate for Fisheries).

This Danish status report shows that the foreseen gradual reduction in eel fishing effort and eel catches is in line with the eel Regulation and the Danish Eel Management Plan. Denmark will inform the Commission if any further action will be considered following the report.

## **1. Outline the monitoring, effectiveness and outcome of the Danish Eel Management Plan**

The Danish fisheries authorities have implemented a control and catch monitoring system to monitor Danish fisheries, including the regulation implemented according to the Danish Eel Management Plan (EMP). Thus the developments in fishing effort and effort reduction and the developments in eel catches and reduction in eel catches have been closely monitored.

Since 2007 the Danish fisheries authorities have applied a risk based strategic control and monitoring of both commercial and recreational fishing activities, in order to target and optimize the utilization of the authority resources based on a dynamic assessment of the risks in each fishery . The risk based control and monitoring strategy has mainly focused on "hot spot" (high priority) areas, periods and species and supported by a biological assessment from the National Institute of Aquatic Resources. The Danish fisheries authorities have furthermore established an electronic reporting system that helps to collect and distribute information about observed irregularities.

Since implementation of the Danish EMP in 2009, this risk based control and monitoring strategy is also targeted control and monitoring of the restrictions implemented in Danish legislation for all types of eel fishing in both marine and freshwater in line with the Danish EMP – i.e. closed seasons, number and type of gears allowed, eel passes, increased minimum legal size for yellow eel.

Glass eel monitoring takes place at a few selected sites. There is no yellow eel monitoring established. As stated in the Danish EMP, silver eel escapement is monitored in three out of 887 river systems. The results from these 3 river systems are converted into production per area (kg/ha) values and then up-scaled to national level.

Concerning the stocking measure and expected outcome, Denmark has initiated a program to monitor the effect by stocking tagged (cw) eels in selected areas. Furthermore, short time experiments in ponds have been initiated to evaluate fitness of stocked eel compared to wild eels.

### Outcome: Commercial eel fishing

The reductions in commercial eel fishing implemented as of 1 July 2009 have by 31 December 2011 resulted in:

- a gradual reduction in commercial eel fishing licenses from 406 to 361
- a substantial reduction in fishing effort for eel relative to the average effort deployed from 2004 to 2006 (section 2.B):
  - fyke nets: 25.6 % reduction
  - small pound nets: 37 % reduction
  - large pound nets: 27.5 % reduction
  - hook lines: 81.1 % reduction
- a reduction in commercial catches by 33 % relative to the average catch in the period 2004-2006
- a substantial regional reduction in commercial catches targeting Baltic Eel relative to the catches in the period 2004-2006 (section 2. B and map in Annex 3)
  - 43 % reduction in Østlige Østersø (area IIIId)
  - 46 % reduction in Bælterne and vestlige Østersø (area IIIc)
  - 15 % reduction in Øresund (area IIIb)
  - 16 % in Kattegat (area IIIa).

### Outcome: Recreational eel fishing

The reductions in recreational fisheries implemented as of 1 February 2009 have resulted in:

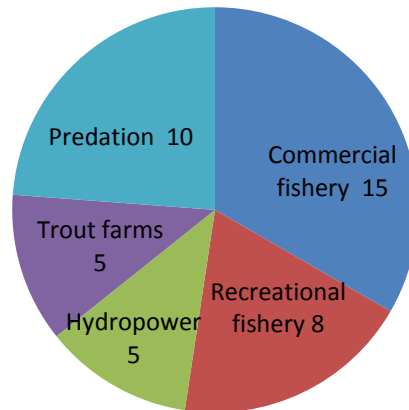
- Recreational eel fishing in marine waters is estimated to have been reduced by 50 % by implementing closed seasons for fyke nets and hook lines. In accordance with Article 11 (2) of the Regulation, the catches of recreational fishermen have been estimated at approximately 100 tons in 2009 and estimated to have been reduced to approximately 80 tons in 2011. The estimates are the results of telephone and internet surveys made by the National Institute of Aquatic Resources and Statistics Denmark among around 10 % of the approximately 34,000 registered recreational fishermen with a required permit to fish with fixed gear.
- Recreational fishery in freshwater is estimated to have been reduced by 50 % from approximately 16 tons to 8 tons by implementing a closed season i.e. a very limited period for eel fishing from 1 August until 15 October.

## **2. Best available estimates of escapement, level of fishing effort and catches, reduction in effort and catches, level of mortality factors outside the fishery and the amount of eel utilized for restocking**

### **2. A. Silver eel biomass currently escaping**

The current best estimate of silver eel production in freshwater is 172.5 tons. Mortalities in freshwater is approximately 43 tons and the calculated current escapement is 129.5 tons. The 40 % pristine target level is 444 tons (Danish EMP) and the difference between current escapement and target level is  $129.5 - 444 = - 314.5$  tons (Table 1).

**Figure 1.** Best estimates of mortality (43 tonne) in freshwater. The number refers to tonne in each category.



The catches of commercial registered fishery is 15 tonne and unregistered fishery from eel traps and recreational fishermen has been reduced by 50 % from 16 to 8 tonne (see Table F in Annex 1). Total fisheries mortality adds up to 23 tonne.

Some mortality has been documented due to hydropower turbines especially from Tange Hydropower plant but not from Vestbirk Hydropower plant (see chapter 2. C1). An estimate from all hydropower plants may be ~5 tonne. At flow-through trout farms located at the bank of rivers the mortality is estimated at ~5 tonne (see chapter 2. C2).

Predation from cormorants and mammals in freshwater is difficult to estimate. An estimate is ~10 tonne. Cormorants do eat eel from rivers and lakes, but they mainly forage in coastal waters, where results from Ringkøbing Fjord show a predation of 40 % of stocked eel during the first year. Mortality outside the fishery adds up to 20 tonne.

**Table 1.** Current escapement from inland waters, mortality factors and Target level.

Inland water	Area (ha)	Silver eel production kg/ha (range)	Total production Tonne (range)
Running water	15,000	7(2-12)	105(30-180)
Lakes	45,000	1.5 (1-2)	67.5(45-90)
<b>Total</b>	<b>60,000</b>		<b>172.5 (75-270)</b>
<b>Mortality (fisheries, hydropower, predation)</b>			<b>43</b>
<b>Current escapement</b>			<b>129.5</b>
<b>Target level – 40 % prestine.</b>			<b>444</b>

## 2. A1. Current production of silver eels

Due to the large number of Danish river systems (887) it was suggested in the Danish EMP to select three index river systems and count the number of silver eels escaping these systems. Data from these index systems are used to calculate the total silver eel escapement from the Danish freshwater territory. The count should be repeated every three years. The National Institute of Aquatic Resources has succeeded in estimating and counting escaping silver eels from River Ribe Å, upper part of River Gudenå and Lake Vester Vandet Sø.

### *River Ribe Å 2010*

River Ribe Å is a medium size lowland river with a catchment area of 1723 km<sup>2</sup> with a commercial fishery situated in the lower part of the river. To estimate the escapement of silver eels in River Ribe Å, 52 silver eels were tagged with acoustic transmitters and released upstream the fishery. Automatic listening stations were positioned in the river to detect the migration of the tagged eels through the commercial fishery and until they reached the Waddenzee. During the experimental period from September to late November all the tagged eels left the river except 9 silver eels that were recaptured in the commercial fishery. Combined with data for the total commercial catch in 2010 of 650 kg silver eels, the total production was estimated at 3672 kg or 12.8 kg per hectare of the river system (Pedersen and Mikkelsen 2011).

### *River Gudenå 2009-2011*

At Vestbirk Hydropower station, situated in the upper part of river Gudenå, the downstream migration of silver eels has been monitored, by use of an eel trap, from August to December every year since 2001. When the eel trap is in operation, 65 % of the spring and autumn migrants are registered. In the last 3 years (2009-2011) an average of 1121 kg of silver migrants have been estimated to bypass the monitoring site. The upstream productive river area (66.6 ha) and lake area (121.3) total 188 ha. The present silver eel production in the area is calculated 2.1 kg/ha.

### *Lake Vester Vandet sø 2010-2011*

In Lake Vester Vandet in northern Jutland (479 ha) silver eels leaving the lake are effectively caught in an eel trap during the months September to November. There is no commercial fishery in the lake but there are some recreational fishermen exploiting the yellow eel stock. Current silver eel production in 2010 and 2011 were 74 and 103 kg respectively. This suggests a minimum escapement of 0.37 kg/ha. The fishery in the lake and also escapement of spring migrants are not included in the minimum escapement. Thus the actual escapement can be estimated to app. 1 kg silver eel per hectare.

In a number of Danish lakes where a commercial fishery takes place the average catch of yellow and silver eel is about 1 kg/ha (see Annex 1, Table 2.A1). This suggests a potential silver eel production in these lakes to be 1-2 kg/ha.

## 2. B. The level of fishing effort that catches eel each year and the level of catches, and the reduction in effort and catches effected since the entry into force of the Regulation

In accordance with Article 8 of the Council Regulation, Denmark has implemented a series of measures aimed at gradually reducing fishing effort and thereby catches in Community waters by at least 50 % relative to the average effort deployed from 2004 to 2006. According to Article 8(1) this reduction is to be achieved gradually, initially by steps of 15 % per year in the first two years over a 5-year period, from 1 July 2009.

In conjunction with the plan, Danish fisheries authorities implemented a license system as of 1 July 2009, which limits each commercial fisherman and entity to a limited number of gears, and thus a limited fishing effort. The system includes a variety of elements, routine compulsory registration and reporting and tangible measures for strengthened control efficiency, providing managers and researchers with comprehensive and reliable data for monitoring, analysis and adequate management.

The developments in fishing effort reduction and the corresponding developments in eel catches have been closely monitored and analysed by the Danish fisheries authorities. The registered reductions in effort have resulted in subsequent and substantial reductions in registered eel catches.

Of the 783 commercial fishermen and entities with registered landings and registered pound nets in the reference period 2004-2006, a total of 525 applied for licences in 2009. A total of 406 commercial licenses were allocated in 2009. Since then, a total of 45 licenses have been cancelled, reducing the number of active commercial fishing licenses to 361. According to Danish national regulation stipulating the conditions for commercial eel fishery, cancellation of inactive licenses will be effected by the Danish fisheries authorities (Danish AgriFish Agency).

### Commercial eel fishing effort and the reduction in fishing effort

Table 2.B.1 below illustrates the level of commercial fishing effort that catches eel each year specified into types of gear, and the gradual reduction in fishing effort from the period 2004-2006, 2007, 2009, 2010 and 2011 (Danish AgriFish Agency).

*Table 2.B.1. The level of commercial fishing effort by gear type from 2004-2006 to 2011 (Danish AgriFish Agency)*

	Fyke nets		Small Pound nets		Large Pound nets		Hook lines	
	Number	Reduction	Number	Reduction	Number	reduction	Number	Reduction
<b>Avg. 2004-2006</b>	<b>43.500 *</b>		<b>1.588</b>		<b>1.572</b>		<b>6.366</b>	
<b>2007</b>	<b>41.114</b>	<b>5,5%</b>	<b>1.578</b>	<b>0,6%</b>	<b>1.582</b>	<b>-0,6%</b>	<b>5.875</b>	<b>7,7%</b>
<b>2009</b>	<b>38.336</b>	<b>11,9%</b>	<b>1.292</b>	<b>18,6%</b>	<b>1.466</b>	<b>6,7%</b>	<b>1.932</b>	<b>69,7%</b>
<b>Ultimo 2010</b>	<b>33.661</b>	<b>22,6%</b>	<b>1.082</b>	<b>31,9%</b>	<b>1.177</b>	<b>25,1%</b>	<b>1.200</b>	<b>81,1%</b>
<b>Ultimo 2011</b>	<b>32.761</b>	<b>25,6%</b>	<b>1.000</b>	<b>37,0%</b>	<b>1.139</b>	<b>27,5%</b>	<b>1.200</b>	<b>81,1%</b>

\*The total number of 40,077 fyke nets registered by the fishermen, who applied for commercial eel licenses in 2009 and an estimate of 3,423 fyke nets used by the 258 fishermen, who reported landings of eel in the reference period 2004-2006, but who did not apply for eel licenses in 2009.

In May and June 2012, the Danish AgriFish Agency met with representatives from all segments of eel fishing and with environmental NGOs in order to give an up to date status of eel fishing and to inform of this report. As the reduction in the number of fyke nets and large pound nets indicates a lower reduction rate, it was suggested that some commercial eel fishermen might hold licenses to use more gear than is actually used for eel fishing. It was therefore decided that the Danish AgriFish Agency and the Danish Fishermens Association later in 2012 will contact the commercial fishermen in order to adjust the individual fisherman's license to the actual number of gear and thus obtain an expected further reduction in commercial eel fishing effort.

#### Commercial eel catches and the reduction in eel catches

*Table 2.B.2. The level of registered commercial catches in tonne since the reference period 2004-2006 and the level of reduction in catches (Danish AgriFish Agency)*

Marine				Fresh water			
Year	Silver	Yellow	Total	Year	Silver	Yellow	Total
<b>2004</b>	342	178	520	<b>2004</b>	4	11	15
<b>2005</b>	384	133	517	<b>2005</b>	4	10	14
<b>2006</b>	424	146	570	<b>2006</b>	8	8	16
<b>2007</b>	413	109	523	<b>2007</b>	5	5	10
<b>2008</b>	363	89	452	<b>2008</b>	5	4	9
<b>2009</b>	367	87	454	<b>2009</b>	8	5	13
<b>2010</b>	306	105	411	<b>2010</b>	11	3	14
<b>2011</b>	271	84	355	<b>2011</b>	10	5	15

The total reduction in commercial catches by 31 December 2011 is 33 % relative to the average catches from 2004-2006.

#### Regional Focus: Regional catches and reduction in regional catches with special regard to fisheries targeting Baltic eel

The Danish EMP states that due to the geographic position of Denmark, the nature of Danish marine waters and the structure of the Danish eel fishing fleet, Danish eel management plays an important role in securing silver eel escapement from the Baltic Sea. The Danish fishing authorities have therefore devoted special attention to fishermen and entities registering eel landings in the Baltic area.



Table 2. B. 3. The level of regional commercial registered catches in tonne and the level of reduction in catches (see map for specific areas in Annex 3). (Danish AgriFish Agency)

	2004	2005	2006	2007	2008	2009	2010	2011
Skagerak (IIIan)	0,3	0,1	0,1	0,3	0,0	0,2	0,1	0,0
Kattegat (IIIas)	20,0	26,1	36,1	26,3	22,1	19,4	21,6	22,9
Øresund (IIIb)	121,7	130,2	138,9	162,3	153,0	156,7	102,2	111,1
Bælterne og vestlige Østersø (IIIc)	163,3	149,3	193,0	138,4	100,9	80,6	108,0	91,8
Østlige Østersø (IIId)	204,2	203,7	193,7	189,8	170,0	187,5	164,3	114,1
Nordsøen (IVb)	10,5	7,4	8,2	5,9	6,2	9,0	14,8	15,6
Freshwater	15,2	13,7	16,0	10,4	8,5	13,3	14,4	14,8
I alt	535,2	530,5	586,0	533,4	460,7	466,7	425,4	370,3

The reduction by 31 December 2011 in registered commercial regional catches, relative to the average catches from 2004-2006 is:

- 43 % in Østlige Østersø (area IIId)
- 46 % in Bælterne and vestlige Østersø (area IIIc)
- 15 % in Øresund (area IIIb)
- 16 % in Kattegat (area IIIas)

As for the level and reduction of recreational eel fishing – see section 1.

## 2. C. The level of mortality factors outside the fishery

### 2. C1. Hydropower

In 2006 there were 43-61 hydroelectric power units in operation in Denmark. Since then several hydropower units have been closed down (e.g. Vilholdt, Karlsgårdeværket, Harte).

Danish legislation stipulates that physical screens with a maximum bar distance of 10 mm must be installed in front of hydropower turbines. Bypasses guiding the eel around the power plant are established at some power plants, although at most power plants only fish ladders to guide salmonid are present. The knowledge of the efficiency of the different bypasses for the downstream migrating silver eel is limited and may differ from place to place. It is known that fish impinge on the turbine screens and die there.

Recent research at the biggest hydropower unit in Denmark, Tange Hydropower plant, suggests that up to 77 % of the eels are lost bypassing the Hydropower plant. There is no exact knowledge of the proportion of eels that impinge on the screens or are lost for other reason e.g. predation and fisheries, but approximately 10 % of the migrants overwinter upstream the power plant and resume migration in the next year. At Tange Hydropower plant there is a significant bypass problem for eels (Pedersen et al. 2011).

At Vestbirk Hydro power station 25 % of the water discharge is passed around the turbines in two bypass facilities. One bypass stream is the old river bed and the other is at the turbine screens guiding the fish around the turbines. The bypass facility seems appropriate and fish including eels do not impinge on the screens except at very low temperatures < 5°C in combination with very high water discharge. These situations usually occur during winter outside the normal eel migration period.

Similar problems likely appear at other hydropower facilities in e.g. Holstebro Hydropower plant. This has not yet been investigated.

## 2. C2. Aquaculture

Danish trout farms are often located on the banks of rivers depending on water intake from the rivers. To guide the river water into the trout farm, a weir is built in the river. Less than 250 trout farms use “flow through” river water and approximately 10 have systems for recirculation of water. To prevent fish from entering the trout farms a screen with a max. 6 mm bar distance is obligatory at the point of the water inflow and a max. 10 mm bar distance at the point of outflow. Small eel can easily enter trout farms, and are possibly preyed by the trout. However, for the past years there has been an on-going process in collaboration with municipal environmental authorities to improve measures for the unhindered migration of several different fish species.

Research in relation to weirs of trout farms have been conducted in connection with three trout farms in River Kongeåen and River Mattrup Å.

**Mattrup Å.** At Brejnholt trout farm in River Mattrup Å the National Institute of Aquatic Resources studied the behaviour of silver eels while bypassing the weir at the trout farm. The river water is guided into the farm by a weir and screens prevent the eels to enter the farm. Fish passage is through an overflow spillway at the weir and the water discharge in the spillway may be significantly reduced depending on the hydrological conditions. The study was conducted during two years. The first year the water discharge was low and only 56 % of the eels bypassed the weir. The second year the river discharge was normal and several more eels succeeded to pass the weir (82%) during the same year as they were released. It was concluded that the weir had a significant effect in delaying migrating silver eels. The delay varied with water discharge in the migration period. It is therefore recommended that a constant amount of water in the fish pass should be available e.g. 25 % of the river discharge to neutralize the effect of the weir (and screens are placed appropriate to guide the fish) ( Pedersen 2012).

In **River Kongeå** two trout farms are situated on the bank of the river at Vejen and Jedsted. In the autumn 2011 forty fish were radio tagged and their downstream migration was monitored while passing the two trout farms. Both trout farms have 6 mm bar distance at the water intake. At Vejen fish farm several fish entered the fish farm despite the 6mm bar screen which seems not correctly installed or damaged. At Jedsted no fish entered the fish farm and the screen was working well. If the screen at Vejen fish farm is fixed properly, eels would not be able to enter the fish farm. However, it is quite difficult to see by eye if there is any such problem at other comparable fish farms unless the place where the screen is mounted is dried out.

## 2. C3. Predation

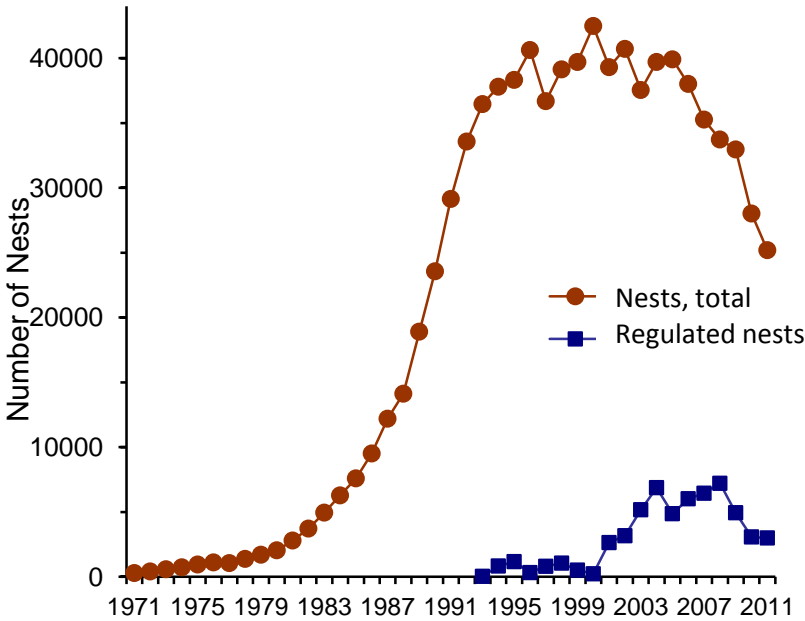
Predation on eel may occur from various species of birds e.g. heron and cormorants and from mammals, e.g. otter, mink, seals and harbour porpoises. Cormorants are possibly the only important predators due to the large number of nesting birds; predation is expected to be largest in the vicinity of the colonies, but migrating birds may have significant impact during the fall.

The number of cormorants nesting in Denmark during the last 10-15 years can be regarded as stable, but with downward trend. In the year 2000, 42,481 nests were counted in colonies throughout Denmark. In 2010 there were 27,910 nests (see figure below).

In the Danish EMP it was suggested that in the period 2004-06 app. 80 tonne of yellow eel was eaten by cormorants. However, recent work from Hirsholmene (57.29°N; 10.37°E) a cormorant colony in Kattegat, analyzing 350 regurgitated pellets showed that eel otoliths occurred with a frequency of 0.3 % (Poul Hald 2007). The frequency of occurrence of eel otoliths found in cormorant pellets in 2005 was only 0.12 % (Sonnesen 2007) suggesting that wild eels are not important as food in Ringkøbing Fjord (55,55°N;08,20°E). However, despite this low occurrence, the estimated number of eels eaten in Ringkøbing Fjord by cormorants in 2004 was 38,000 – more individuals than was caught in the fishery – and recovery of cw-tags from 20,000 tagged stocked eels showed a 40 % predation from cormorants during the first season (Jepsen et al. 2010). Thus, cormorant predation can be a very significant factor in areas with a high cormorant density. The number of cormorants in Ringkøbing Fjord is not higher than most coastal areas in Denmark.

Recent analyses of data from ongoing studies of silver eel migration, using PIT tagging, showed that even relative large silver eels can be eaten by cormorants as PIT tags were recovered from nearby colonies and roosting sites. The recoveries may provide a basis for quantification of the predation in future studies.

**Figure 2C.3.** Number of cormorant nests in Denmark. Data from NERI. University of Århus.



**2. D. The amount of eel utilized for restocking**

See section 3.8.

**3. Have all the foreseen measures been fully implemented as described within the adopted plan pertaining to your national territory?**

**3.1 Fisheries**

All the foreseen measures have been fully implemented as described within the adopted Danish EMP.

### **3.2 Obstruction to migration**

As part of general measures to restore rivers, a high number of obstacles have been and are currently being removed. This includes two major hydropower stations (Harte and Karlsgårde) and close to 100 smaller dams and weirs, many of which were fish farm dams. These measures have certainly improved both up- and downstream eel passage and reduced silver eel mortality substantially in the restored rivers. Routine control of eel passes and their functionality at remaining obstructions in rivers has continued.

### **3.3 Hydropower**

Some investigations have been conducted (see section 2.C1). The mortality and delay (silver eels) caused by hydropower facilities are significant and can best be mitigated by complete removal of the facility or by letting a significant proportion of the water run through a bypass channel (like is the case at Vestbirk Hydropower station). The Danish stations are old and produce insignificant amount of power. Currently, only 3 larger facilities remain.

### **3.4 Aquaculture**

Some investigations have been conducted (see section 2.C2.) The mortality and delay (silver eels) caused by traditional fish farms are significant and can best be mitigated by complete removal of the facility or by letting a significant proportion of the water run through a bypass channel. Recently, many Danish fish farms are being converted into fully recycled facilities, which do not require weirs to divert water through. Thus, numerous weirs have been removed and the river connectivity restored. This process is encouraged by the authorities and is expected to continue. A removal of fish farm barriers will clearly benefit migrating eels.

### **3.5 Predators**

According to the National Management Plan for Cormorants, regulations in the form of protective shooting (at fish nets and fish farms) as well as egg oiling (culling) in colonies have continued, resulting in a significant reduction in the numbers of breeding pairs (see section 2C3). No new research has been conducted to evaluate the effect on cormorants on local eel population.

### **3.6 Parasites and contaminants**

Procedures for testing restocked eel for viruses and parasites (anguillicoloides) have continued as a standard protocol and monitoring of the spread of *Anguillicola Crassus* is continued. There is no new knowledge available to further limit contamination of anguillicoloides.

### **3.7 Eel habitats**

A high number of obstacles are currently being removed (see section 3.2). The Ministry of Environment continues to reduce nutrient flows from soil to river basins. This is being done by re-establishing formerly drained lakes and meadows. Aside from official wetland restoration projects, a private fund (Aage V. Jensens Fund) is currently working to reestablish the 915 ha Lake Filsø.

Considerable improvements and measures for restoration of Danish rivers will take place in 2012 and 2013 through grants of app. 66 million DKK per year (equal to app. 8.8 million Euro a year). These measures will also benefit migrating eels.

### 3.8 Restocking

Restocking has been fully implemented as described within the Danish EMP. The amount of restocked eel in freshwater has increased from year 2010, where funds from the European Fisheries Fund were granted. In the Danish EMP the amount of eel to be restocked was proposed to be 0.8 million eels. The actual amount of restocked eels has increased to 1.2-1.4 million eels in 2010 and 2011 (Table 3.8).

**Table 3.8.** Number of restocked eel size 2-5 gram.

Year	Lakes, #	Rivers, #	Total, #
2009	203,900	50,000	253,900
2010	574,350	672,000	1,246,350
2011	771,000	590,000	1,361,000

#### **4. Provide a list of the measures foreseen and implemented and a list of the measures foreseen but not implemented. Provide the date as of which each measure was implemented**

The measures foreseen in the Danish Eel Management Plan have all been implemented.

The regulation and restrictions for commercial eel fishing activities was implemented as of 1 July 2009.

The regulation and restrictions for recreational eel fishing activities was implemented as of 1 February 2009.

#### **5. Provide an explanation for each measure included in the adopted plan(s), which has not been implemented, or implemented after the foreseen date. If an alternative measure was implemented, please describe it and compare its effectiveness in relation to the measure it has replaced or will replace**

Denmark has nothing to report.

#### **6. Please list the difficulties encountered in the implementation of the plan**

Denmark has not encountered major difficulties in the implementation of the Danish EMP. Since the implementation of the Danish EMP, Danish fisheries authorities and the National Institute of Aquatic Resources have had a close cooperation with all segments of eel fishing.

**7. Do you have any indication/evidence/data to suggest that an amendment of the Regulation is necessary to achieve the objective set out in Article 2(4) of the Regulation and to ensure the recovery of the species?**

Denmark does not yet have any indication/evidence/data to suggest that an amendment of the Regulation is necessary to achieve the objective set out in Article 2(4) of the Regulation and to ensure the recovery of the species.

However, Denmark will continue to follow the situation closely.

Denmark will inform the Commission if any new inputs to amendment of the Regulation are found.

**8. Attach as an annex the annual report required in line with Article 7(5)**

Reporting on prices for eels for restocking. See Annex 2.

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## Annex 1

Produced in accordance with Commission Guidance document.

**Table 2.A1.** Catch from Danish freshwater lakes.

Lake	2009-2011		Catch (kg/ha)
	Catch (kg)	Area (ha)	
Arresø	4.185	4047	1.0
Flade sø	572	482	1.2
Flyndersø	125	418	0.3
Højer	795		
Julsø	1.109	566	2.0
Jylland s f limfjord, uspec ferskv	573		
Mossø	551	1689	0.3
Nors sø	15		
Ry	919		
Saltbæk vig	2.758	1418	1.9
Sjælland og øer, uspec ferskv.	15		
Skanderborg sø	425	862	0.5
Stilling solbjerg sø	237	371	0.6
Tange sø	1.139	537	2.1
Tissø	1.152	1290	0.9
Tjele langsø	192	406	0.5
<b>Total</b>	<b>14.761</b>		<b>1.0</b>

**B<sub>0</sub>** = 1110 tonne

**B<sub>current</sub>** = 129.5 tonne

**B<sub>best</sub>** = 172.5 tonne

*Table F. Fishing mortality and the reduction affected. Catch in the reference period 2004-2006 and in 2011.*

Fishery	2004-2006	2011
Commercial fishery (*)	15	15
Recreational, eel traps, landowners (**)	16	8
<b>Total</b>	<b>31</b>	<b>23</b>

(\*)Reported catch data (\*\*) Fishing effort reduced by 50 %

*Estimates of mortality outside the fishery – no new measures have been put into practice. However, some hydropower plants have been closed down.*

	2004-2006	2011
Hydropower (ca. 35-55 small units)	?	5
Fish farms (< 250 farms)	?	5
Predation (Cormorants)	?	10
<b>Total</b>		<b>20</b>

*Approximate number of glass eels used for stocking (calculated by multiplying number of stocked eel by 1.3 equal to 30 % mortality between glass eel and 2-5 gram eel)*

Year	Total, # (2-5 g)	Glasseel used, #
2009	253,900	330,070
2010	1,246,350	1,620,255
2011	1,361,000	1,769,300

A = the sum of anthropogenic mortality equal 43 tonne.



## Annex 2

### **Article 7 (5) in Council Regulation (EC) No 1100/2007 of 18 September 2007 establishing measures for the recovery of the stock of European eel – Reporting on prices for eels for restocking**

Please find Danish data for the quantity and prices paid for eel 2-5 g for restocking in accordance with Council Regulation (EC) 1100/2007 and the Danish Eel Management Plan.

In order to fulfil the reporting obligations set out in Article 7 (5) of the Regulation, the Commission requests that the Member States provide the following information in writing:

- a) Prices paid for glass eel purchased for the purpose of restocking, starting from the date of implementation of the relevant Member State's eel management plan until present.

The Danish Eel Management Plan was implemented on 1 July 2009. Restocking of eel in 2009 was effected before 1 July 2009. Information on eel for restocking will therefore be given from 2010 until present.

As described in the Danish Eel Management Plan, Denmark does not stock glass eel. Danish eel farmers purchase glass eel, typically from France. After 2-3 months in aquaculture, eels of 2-5 g are purchased by the Ministry of Food, Agriculture and Fisheries for restocking.

In 2010 the average price of eel for restocking was approximately 2.35 DKR equal to 0.31 EUR for each eel of 2-5 g.

In 2011 the average price of eel for restocking was approximately 2.05 DKR equal to 0.27 EUR for each eel of 2-5 g.

In 2012 the average price of eel for restocking is foreseen to be approximately 2.07 DKR equal to 0.28 EUR for each eel of 2-5 g.

- b) The quantity of glass eel bought for restocking during the time period mentioned in (a).

In 2010 approximately 1.24 million eels of 2-5 g were bought for restocking in accordance with the Danish Eel Management Plan. Additional approximately 200.000 eels of 2-5 g were bought for restocking in marine waters.

In 2011 approximately 1.36 million eels of 2-5 g were bought for restocking in accordance with the Danish Eel Management Plan. Additional approximately 200.000 eels of 2-5 g were bought for restocking in marine waters.

The same quantity as in 2011 is planned to be bought for restocking in 2012.

- c) The quantity of glass eel foreseen to be restocked in the relevant Member State's plan  
In the Danish Eel Management Plan it is foreseen to restock approximately 800.000 eels of 2-5 g.
- d) The quantity of glass eel the relevant Member State plans to restock in the following years.

Denmark plans to restock the same quantity as mentioned under (b) for 2011 in the following years.

## Annex 3

Shows the regional areas described in table 2. B.3

