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# FISHERY ASSESSMENT REPORT

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## IFFO GLOBAL STANDARD FOR RESPONSIBLE SUPPLY OF FISHMEAL AND FISH OIL

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|------------------------|----------------------------------|
| <b>FISHERY:</b>        | <b>Menhaden</b>                  |
| <b>LOCATION:</b>       | <b>Gulf of Mexico</b>            |
| <b>DATE OF REPORT:</b> | <b>23<sup>rd</sup> June 2010</b> |
| <b>ASSESSOR:</b>       | <b>Mike Platt</b>                |

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| 1. APPLICATION DETAILS AND SUMMARY OF THE ASSESSMENT OUTCOME |                          |   |  |
|--|--------------------------|---|--|
| Name: Daybrook Fisheries, Inc / Omega Protien Inc            |                          |   |  |
| Address: [REDACTED]  |                          |   |  |
| Country: U.S.A   |                          | Zip: [REDACTED]                                       |  |
| Tel. No. [REDACTED]  |                          | Fax. No. [REDACTED]                                   |  |
| Email address: [REDACTED]                                    |                          | Applicant Code [REDACTED]                             |  |
| Key Contact: [REDACTED]                                      |                          | Title: [REDACTED]                                     |  |
| Certification Body Details                                   |                          |   |  |
| Name of Certification Body:                                  |                          | Global Trust Certification Ltd.                       |  |
| Assessor Name  | Peer Reviewer            | Assessment Days                                       | Initial/Surveillance/ Re-certification |
| Mike Platt   | Dave Garforth            | 10 Days   | Initial                                |
| Assessment Period  | January 2010 – July 2010 |   |  |
| Scope Details  |                          |   |  |
| 1. Scope of Assessment                                       |                          | IFFO Global Standard for Responsible Supply , Issue 1 |  |
| 2. Fishery   |                          | Menhaden, Gulf of Mexico                              |  |
| 3. Fishery Location  |                          | Gulf of Mexico  |  |
| 4. Fishery Method  |                          | Purse Seining   |  |
| Outcome of Assessment  |                          |   |  |
| 5. Overall Fishery Compliance Rating                         |                          | HIGH COMPLIANCE                                       |  |
| 6. Sub Components of Low Compliance                          |                          | Not Applicable  |  |
| 7. Information deficiency                                    |                          | Not Applicable  |  |
| 8. Peer Review Evaluation                                    |                          | Accept  |  |
| 9. Recommendation  |                          | CIRCULATE TO CERTIFICATION COMMITTEE                  |  |

**2. QUALITY OF INFORMATION (section 3)**

Quality of information was generally sufficient, additional information was sourced from Omega Protein. The information sourced allowed for the evaluation of the fishery against the IFFO standard.

**3. COMPLIANCE LEVEL ACHIEVED (section 2)**

A **HIGH** Compliance level has been awarded. Refer to the table detailing the summary level of compliance.

**Recommendation**

**Circulate report to certification committee.**

**4. GUIDANCE FOR ON-SITE ASSESSMENT**

**Based on HIGH compliance findings**

- The auditor should check that there are no IUU activities and that the enforcement and control systems are in place. What actions do the port agents take on non-compliance?
- The on-site assessment should confirm that there is a procedure and records that demonstrate that each supplying vessel is legally entitled to fish in the fishery.
- The auditor should inspect a fisher log book and note any comments on interactions with ETP species etc. What has the captain been asked to do?
- The auditor should review permits etc. to ensure they are valid for harvesting Menhaden for Reduction purposes.
- The auditor should check fishing activities only take place in day light hours and from Monday to Friday during the fishing season.
- The auditor needs to confirm how the 5% maximum allowance for by-catch species is enforced.

**Based on MEDIUM compliance findings**

- **Not Applicable.**

**Based on LOW compliance findings**

- **Not Applicable.**

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| <b>5. ASSESSMENT DETERMINATION (section 1)</b>                                      |
| Overall a <b>HIGH</b> compliance has been assigned at this stage of the assessment. |
| <b>HIGH Compliance</b>  |
| All sections of the fishery achieved a <b>HIGH</b> compliance.                      |
| <b>MEDIUM Compliance</b>  |
| <ul style="list-style-type: none"> <li>• <b>Not Applicable</b></li> </ul>           |
| <b>LOW Compliance</b>   |
| <ul style="list-style-type: none"> <li>• <b>Not Applicable</b></li> </ul>           |

| SUMMARY OF LEVEL OF COMPLIANCE  |   |   |                        |                     |                |
|---|---|---|------------------------|---------------------|----------------|
|   | The Management Framework and Procedures | Stock assessment procedures and management advice | Precautionary approach | Management measures | Implementation |
| legal and administrative basis  | A1                                      |   |                        |                     |                |
| Fisheries management should be concerned with the whole stock unit  | A2                                      |   |                        |                     |                |
| Management actions should be scientifically based   | A3                                      |   |                        |                     |                |
| Research in support of fisheries conservation and management should exist   |   | B1  |                        |                     |                |
| Best scientific evidence available should be taken into account when designing conservation and management measures   |   | B2  |                        |                     |                |
| The precautionary approach is applied in the formulation of management plans  |   |   | C1                     |                     |                |
| The level of fishing permitted should be set according to management advice given by research organisations   |   |   |                        | D1                  |                |
| Where excess fishing capacity exist, mechanisms should be established to reduced capacity   |   |   |                        | D2                  |                |
| Management measures should ensure that fishing gear and fishing practices do not have a significant impact on non-target species and the physical environment |   |   |                        | D3                  |                |
| A framework for sanctions of violation of laws and regulations should exists  |   |   |                        |                     | E1             |
| A management system for fisheries control and enforcement should be established   |   |   |                        |                     | E2             |

**KEY:**                      Low Compliance:                           Medium Compliance:                           High Compliance:                     

|   |                                      |              |           |
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**SUMMARY OF FISHERY**

This following report deals solely with the Gulf Menhaden (*Brevoortia.patronus*) fishery and cannot be used to assess the Atlantic Menhaden (*Brevoortia tyrannus*) Fishery, due to the quite distinct geographical locations of each fishery.

Gulf Menhaden, is a small (generally <22 cm fork length), euryphaline clupeid fish found in coastal waters of the northern Gulf of Mexico.

The species ranges from Cape Sable, Florida to Veracruz, Mexico, although it is most abundant from the Florida Panhandle to eastern Texas. During spring through to autumn, the Gulf Menhaden forms dense, near-surface schools, which are utilised by a large, industrial purse-seine fishery.

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**6. RATIONALE OF THE ASSESSMENT OUTCOME**

**A. THE MANAGEMENT FRAMEWORK AND PROCEDURE**

| LEVEL OF COMPLIANCE  |  |
|--|--|
| <i>A1. The management of the fishery must include a legal and administrative basis for the implementation of measures and controls to support the conservation of the fishery.</i> |  |
| <b>LOW</b>   | An administrative framework that ensures an efficient management of the fishery for its conservation is not established.   |
| <b>MEDIUM</b>  | An administrative framework that ensures an efficient management of the fishery for its conservation is somehow established, but there is evidence of its not being efficient to ensure the conservation of the stock. |
| <b>HIGH</b>  | A legal and administrative framework that ensures an efficient management of the fishery for its conservation is established and works efficiently toward the conservation of the stock.                               |

**Determination**

**It is the conclusion of the assessment team that there is an extensive legal and administrative basis for implementation of measures to control and support the long term conservation of the Gulf Menhaden fishery, and as such a highly compliant rating has been given.**

The principle act for the administration of U.S. fisheries is The Magnuson Stevens Fishery Conservation and Management Act (FCMA) 1976 which came into force and created an exclusive economic zone (EEZ) extending 200 miles from the shoreline. Only approved foreign and domestic vessels can fish in these zones.

Under this jurisdiction The Gulf marine resources in the EEZ are under the regulatory control of the Federal Government via the National Marine Fisheries Service (NMFS).

Each individual State controls its own territorial waters via their own lead marine resource agency. In the Gulf of Mexico the states control the water from their shoreline out to 3 miles, except Florida and Texas who both control out to 9 miles.

- The five lead state agencies are:
- Florida Fish and Wildlife Conservation Commission;
  - Alabama Department of Conservation and Natural Resources;
  - Mississippi Department of Marine Resources;
  - Louisiana Department of Wildlife and Fisheries;
  - Texas Parks and Wildlife Department.

The FCMA has also established the general framework for managing the Gulf’s fisheries and a council was set up. The Gulf of Mexico Fishery Management Council.

The members of this council are residents in the Gulf and are knowledgeable on fisheries.

This council’s main role is to draft fishery management plans that will manage the commercially important species within the Gulf. These plans are then submitted to the NMFS and are reviewed with the most up to date scientific data and legal requirements. If the plans are consistent with the advice they will be implemented. The fishing plan for Menhaden is reviewed at least every 5 years or sooner if the scientific data warrants it.

All approved fishery plans from the council are managed by the gulf states via a commission called the Gulf States Marine Fisheries Commission (GSMFC).

Each state has representation on the Commission; the Commission determines management policies for each state to regulate within their respective waters.

Each representative state within GSMFC will only accept permits for fishing interests to harvest Menhaden within its waters during the established season window; although harvest for bait is allowed to begin 2 weeks earlier or later to gain a maximum of 3000 tons. All the listed states regulatory bodies are responsible to monitor effort within their waters. In addition all state harvest permits are specified as either for reduction or bait at this time.

The fishing season begins on the third Monday of April every year and continues until November 1<sup>st</sup>.

**LEVEL OF COMPLIANCE**

*A2. Fisheries management should be concerned with the whole stock unit over its entire area of distribution and take into account fishery removals and the biology of the species.*

|               |   |
|---------------|---|
| <b>LOW</b>    | Fisheries management is not concerned with the whole stock unit over its entire area of distribution and does not take into account any of the matters listed in 'A1'.  |
| <b>MEDIUM</b> | Fisheries management is concerned with matters listed in 'A1' but not entirely. Fisheries, in relation to 'A1' statement, should improve to ensure the long term conservation of the marine resource.   |
| <b>HIGH</b>   | Fisheries management should be concerned with the whole stock unit over its entire area of distribution and take into account: <ul style="list-style-type: none"> <li>• All fishery removals</li> <li>• The biology of the species</li> </ul> |

**Determination**

**The evidence denotes that the entire distribution of this Gulf Menhaden stock is managed and the assessment team has rated this as highly compliant to the standard.**

The assessment found that fisheries management is concerned with the whole stock over its entire range and does take into account fishery removals and the biology of the species.



The life biology of the menhaden is understood. Although no major longitudinal migrations are known to occur, Gulf Menhaden tend to move inshore in early spring and up to 80 km off-shore in late autumn. Spawning occurs October through March and peaks off-shore in December and January. Eggs hatch at sea, and larvae are carried by currents to inland waters, where they metamorphose into juveniles.



Gulf Menhaden spend their first summer in estuaries, then migrate offshore by late fall. The following spring, they move back into coastal waters.

The NMFS and the Gulf Council jointly control all the fishing activity in the EEZ throughout the entire distribution of the Gulf Menhaden.

The GSMFC and individual state marine agencies control the fishery in the territorial waters and estuaries.

All these management agencies between them oversee the management of the entire Menhaden stock within the Gulf of Mexico.

The Menhaden stock tends to form dense shoals that stay relatively close to the shore and therefore never leave the waters controlled by these stated agencies.

Post 1976 the FCM Act has ensured that only US registered boats are allowed to fish in these waters.

**LEVEL OF COMPLIANCE**

*A3. Management actions should be based on long-term conservation objectives*

|               |   |
|---------------|---|
| <b>LOW</b>    | Management actions are not based on long term management objectives.  |
| <b>MEDIUM</b> | Management actions are based on long term management objectives. However the actions are not scientifically formulated. |
| <b>HIGH</b>   | Management actions are based on long term management objectives, and these actions are science based.                   |

**Determination**

**There is a long term conservation management plan that covers the entire fishery and these actions are science based. The assessment team has given this a highly compliant rating to this part of the standard.**

The fishery long term conservation objectives for the Menhaden are based upon

- Acoustic surveys to detect stock abundance
- Egg surveys to detect fecundity rates
- Restricted fishing areas to protect juvenile menhaden the boats are not allowed to fish in any bay, river, pass or tributary, or within one mile of any barrier, jetty, island or pass, or within ½ mile offshore in the Gulf of Mexico.
- Restricted fishing season during the menhaden spawning phase
- Day fishing only no electronic fishing aids

It is considered that the existing seasonal management of the fishery has proven to be successful for the protection of the menhaden resource. This approach to controlling fishing capture by the use of a restrictive season was created over sixty years ago and was initiated by the fishing industry, but has now been adopted by the regulatory authorities of the Gulf States to protect the fishery during its spawning phase.

| B. STOCK ASSESSMENT PROCEDURES AND MANAGEMENT ADVICE                                  |  |
|---|--|
| LEVEL OF COMPLIANCE   |  |
| <i>B1. Research in support of fisheries conservation and management should exist.</i> |  |
| <b>LOW</b>  | Research to support the conservation and management of the stock, non-target species and physical environment does not exist   |
| <b>MEDIUM</b>   | Research to support the conservation and the management of the stock, non-target species and physical environment exists, however research programmes could be significantly improved to decrease scientific advice uncertainty.                             |
| <b>HIGH</b>   | Research to support the conservation and the management of the stock, non-target species and physical environment exist, and existent research is considered most adequate for the long term conservation of the target, non-target and physical environment |

**Determination**

**There is a large amount of scientific research that has reviewed the state of this menhaden stock, which is being used to support the overall management of the fishery and follows proven scientific rational.**

The NMFS conducts extensive research on this fishery and has over 50 years worth of data to back up any advice it gives on the management of this fishery. A statistical catch-age model has been developed that estimates the stock fecundity and age specific fishing mortality rates.

The data that is collected is from both sampling at sea and from port landings, in excess of 6700 fish are assessed annually.

The model fits closely the landings and age composition data, but is not as accurate to the juvenile abundance index (Vaughan 2007).

The results of the 2007 assessment stated that taking in account all the uncertainties of the assessment methods and models used to predict this stock that appeared to be in good condition.

The 2007 assessment researchers have “proposed” target and limit reference points based on per recruit analysis, but as stated earlier there is a debate of the current assessment strategies for setting fishery control points.

As with the reference points used for the Atlantic species of Menhaden, the science proposed targets and limits for fishing mortality rate and population fecundity (synonymous with total egg production).

The science resulting from these reference points has indicated that the Fishing mortality may be slightly above that which will return long term yield and that, long-term it may have to be reduced.

However, the data overwhelmingly suggests that the fishery is currently not unsustainably fished and this was substantiated in 2007 by the GSMFC.

An in depth extensive stock survey is planned for 2011, which will be reviewed by scientists provided by the Centre For Independent Experts and will be an improvement on the last one as it will be based on the survey techniques tested on the Atlantic Menhaden fishery.

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| LEVEL OF COMPLIANCE   |  |
|---|--|
| <i>B2. Best scientific evidence available should be taken into account when designing conservation and management measures.</i> |  |
| <b>LOW</b>  | Scientific advice is not taken into account when designing conservation and management measures.   |
| <b>MEDIUM</b>   | Scientific advice is taken into account, when designing conservation and management measures. However some areas of discrepancy are identified that could have a significant impact in the long term conservation of the marine environment. |
| <b>HIGH</b>   | Scientific advice is taken into account, when designing conservation and management measures, in a comprehensive manner.   |

**Determination**

**There is clear evidence that science is taken into account when designing the conservation and management measures used in this fishery.**

On a US federal level, preference has always been given to managing US fisheries by using MSY- (or Maximum Sustainable Yield) derived reference points such as Bmsy, Fmsy, etc, even though direct estimation of Bmsy and Fmsy is often not possible or reliable. Such reference points can be incorporated into control rules, which may then call for reductions in fishing effort or landings when a stock falls below an optimal population size (such as SSBmsy) or fishing mortality goes above what is sustainable in the long-term (such as Fmsy).

For many species setting harvest at some precautionary fraction of MSY allows managers to set long term sustainable harvest based on a long-term sustainable population size.

Implicit in that assumption of a long-term harvest being sustainable for a long-term population size (and vice versa), is that the stock recruitment relationship is well known and unchanging. For many species which exhibit a high degree of recruitment variability, setting reference points based around MSY may lead to rapid fluctuations in stock status.

The greatest concern would then be sharp population declines under MSY-level removals during periods of low recruitment, although the opposite may also possible. Such difficulties are more apparent when the species examined is short lived, as recruitment is a result of only a few age classes. In these cases, lower recruitment results in lower SSB within a few short years, further lowering the possibility for future recruitment.

The Fishery Management may then not have time to react to such changes before complete stock collapse. Moreover, MSY-based reference points require equilibrium environmental conditions, an assumption which is difficult to make for a forage species such as the Menhaden. As a result, many have called for the complete removal of MSY-based reference points all together (Larkin 1977; Gulland 1978, and Barber 1988).

TAC is a derivative of the MSY approach and according to this evidence should not solely be used to manage the long term conservation of this Menhaden fishery.

The overwhelming scientific evidence considers that at present, the existing seasonal management and the technical restrictions imposed on the fishery, have proven to be the most successful for the protection of the menhaden resource.

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**C. THE PRECAUTIONARY APPROACH**

**LEVEL OF COMPLIANCE**

*C1. The precautionary approach is applied in the formulation of management plans.*

**LOW** The precautionary approach is not applied in the formulation of management plans.

**MEDIUM** The precautionary approach is applied, however not all uncertainties are taken into account.

**HIGH** The precautionary approach is applied, taking into account uncertainties relating to the dynamic of fish population (recruitment, mortality, growth and fecundity), and the impact of the fishing activities, such as discards and by-catch of non-target species as well as on the physical environment (Habitats).

**Determination**

**The precautionary principles state that uncertainties are taken into account to reduce or mitigate potential risks to the fishery, to by-catch and to the ecosystem. From the evidence available precautionary principles are applied in the formulation of the fisheries management plans.**

The precautionary approach to the management of the Menhaden fishery must satisfy the following three criteria.

1. The fisheries management framework must apply a precautionary approach to the conservation of the target fishery resource, associated non target species and for the conservation of the wider ecosystem.

The Gulf Menhaden fishery is managed in accordance with the FCM Act and all the federal and state bodies have a firm commitment to manage the entire fishery for its long term conservation.

Research has shown that effect of the purse seine gear used in this fishery will have low impact on the ecosystem as it does not come into direct contact with the seabed. In addition the menhaden form dense shoals and as this is a single species fishery the instances of large by-catches of non target species are rare, the usual by-catch rate is less than 1%.

2. Suitable or proxy target and limit reference points must be set and take into account uncertainties relating to the size and productivity of the stocks, unknown fishing mortality and the impact of fishing on the environment.

Due to the short life of Menhaden, research already described in a previous section has stated that setting MSY target reference points may in actual fact do more harm for the long term conservation of the stock. However, work on the Atlantic Menhaden has tried new statistical models and is due to try establishing targets and limits for the fishery using a measure of fishing mortality and population fecundity. If this is proved effective then the same criteria will be adopted in the Gulf Menhaden Fishery.

3. Precautionary measures must consider (where relevant) discards, dependent species, habitats, communities and threatened, endangered and protected species.

The management plans restricted:

- Fishing areas to protect juvenile menhaden. The boats are not allowed to fish in any bay, river, pass or tributary, or within one mile of any barrier, jetty, island or pass, or within ½ mile offshore in the Gulf of Mexico.
- Fishing season during the menhaden spawning phase
- Technical measures have been exerted on the fishery for e.g. All purse seiners are fitted with excluders to allow non target species such as large game fish and turtles to be netted out and not pumped directly into the hold”.

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- The Purse seine nets that are used are designed to allow the small fish to escape have been set to 1-1 ½ inch stretched mesh, not including the bag.
- Other by-catches must not exceed 5% of the volume of the Menhaden in possession.
- All purse seiner nets are fitted with excluders which allow large game fish and mammals to be netted-out and prevent them from being pumped into the ship’s hold.

Research conducted by Louisiana State University confirmed that the Gulf Menhaden purse seine fishery was an exceptionally clean fishery. The fishery only has a negligible incidental catch of fish other than Menhaden.

1994 study 93% of the total weight of the by-catch was accounted for by 8 species. These were Atlantic croaker 25%, striped mullet 17%, gafftopsail catfish 12%, silver seatrout 10%, Spanish mackerel 9%, atlantic bumper 8% hardhead catfish 6% and sand trout 6%.(Condrey 1994)

The formulation of Menhaden management plans does **not explicitly state that a precautionary approach** is taken although there is a solid recording system of catches, rigorous enforcement of these fishery management measures which do constitute precautionary measures based on the biology of the species.

In addition, a further survey is planned in 2011 as it is known that the current stock prediction models have produced some uncertainties and it will be based on the survey techniques tested on the Atlantic Menhaden fishery.

**D. MANAGEMENT MEASURES**

**LEVEL OF COMPLIANCE**

*D1. The level of fishing permitted should be set according to management advice given by research organisations.*

|               |  |
|---------------|--|
| <b>LOW</b>    | The level of fishing permitted is not set according to management advice given by research organisations.  |
| <b>MEDIUM</b> | The level of fishing permitted is higher than management advice given by research organisations. However, the difference is not considered to have a significant impact of the sustainability of the stock |
| <b>HIGH</b>   | The level of fishing permitted is set according to management advice given by research organisations.  |

**Determination**

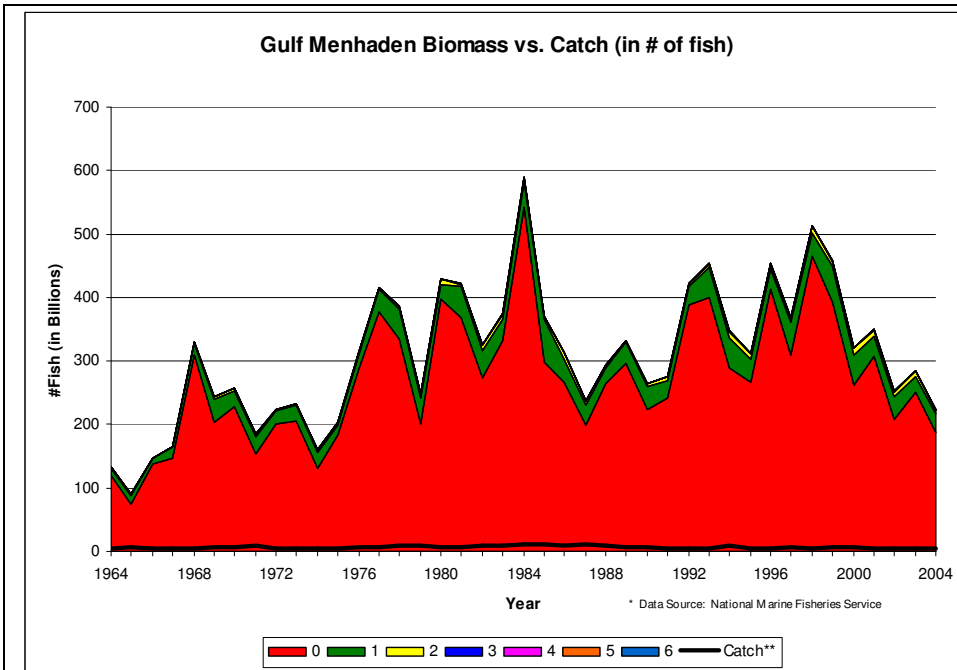
**All the measures are taken to ensure that the level of fishing is maintained to the limit required by the known scientific evidence are complied with in this fishery**

NMFS scientists forecast a total catch of 460,000 t, with 80% confidence levels of between 339,000 t and 582,000 t (NMFS, March 2008).

The Gulf of Mexico purse seine fleet landed actual landings were 453,823 t of Menhaden for reduction in 2007. “This is down 2% from total landings in 2006 (464,393 t), and down 8% from the previous five-year mean (491,704 t). Landings in 2007 were the second lowest reported since 1992” (NMFS, March 2008).

The reasons given for the lower catches was poor weather. (NMFS, March 2008).

However, since 1955, landings and effort both show a clear rise and fall, peaking in 1985. Since 2004 landings have hovered around 450,000 t to 500,000 t, consistent with fishing effort that has settled down to less than 400,000 “vessel ton weeks,” a unit used by the U.S. National Marine Fisheries Service (NMFS) office in Beaufort, North Carolina to track observed effort. This fishing effort is according to research over the past 30 years about 3% of the total stock biomass, so the affect on predator species and the longer term conservation of the stock should be minimal.



The fishing season is considered a very successful device to limit fish catch. The Gulf Menhaden is in addition a very restrictive fishery as a sight methods only are used to detect the shoals e.g. spotter planes. No electronic fish detection device e.g. sonar are used and fishing activity is only permitted from Monday to Friday each week of the season. These measures are considered to be very effective and have been verified by the onsite audit.

| LEVEL OF COMPLIANCE  |  |
|--|--|
| <i>D2. Where excess fishing capacity exists, mechanisms should be established to reduce capacity to allow for the recovery of the stock to sustainable levels.</i> |  |
| <b>LOW</b>   | Mechanisms to allow for recovery of the stock to sustainable levels are not established.   |
| <b>MEDIUM</b>  | Mechanisms to allow for recovery of the stock to sustainable levels are somehow established. However there is no evidence of the efficiency of the methods used. |
| <b>HIGH</b>  | Mechanisms are established to reduce capacity to allow for the recovery of the stock to sustainable levels and there are evidences of recovery.                  |

**Determination**

**The menhaden fishery has management mechanisms that can reduce fishing activity if the scientific data indicates that the stock is being fished at unsustainable levels.**

From the data collated the fishing effort in the reduction industry and the fishing effort for the bait industry is still comparably small in relation to the size of the Menhaden biomass, less than 3% on average.

As the fishery is solely in US controlled seas and the FCM Act has prevented large increases in fishing effort for the Gulf Menhaden.

In recent years, over 4,000 fish have been sampled annually by the port agents. At the end of the fishing season, biostatistical data are merged with landings on a port-week basis to produce estimated landings of fish at age (in numbers). Estimates are summed overall port-weeks for the entire fishing season to produce annual estimates of total landings at age. This data is then used to review the total fishing operation.

The Menhaden fishery conservation plans call for the continuance of the protective season and fishing permit concept.

| LEVEL OF COMPLIANCE   |  |
|---|--|
| <i>D3. Management measures should ensure that fishing gear and fishing practices do not have a significant impact on non-target species and the physical environment.</i> |  |
| <b>LOW</b>  | There are no management measures to prevent the impact of the fishing methods and fishing practices on non-target species and the physical environment.  |
| <b>MEDIUM</b>   | There are management measures to prevent the impact of the fishing methods and fishing practices on non-target species and the physical environment. However it is not science based.              |
| <b>HIGH</b>   | There are management measures to prevent the impact of the fishing methods and fishing practices on non-target species and the physical environment. Measures are based on scientific information. |

**Determination**

**The evidence provided does indicate that all efforts to minimise the effect of the fishing activity on the physical environment and non-target species have been taken by the fishery. The on site assessment did verify that these requirements are being complied with by the fishermen.**

To check the fishery NOAA observers regularly accompany the purse seiners to the fishing grounds and conduct detailed observations regarding fishing practices and by-catch species and amounts, including marine mammals and birds.

No evidence could be found during this assessment that any significant impact as a result of this fishing effort was having a detrimental effect on endangered marine mammals, birds or predatory fish. However the boat captain’s and crews are instructed that if a marine mammal (dolphin) is found to be in the net, the net must be released. No reports of interactions with whales has been recorded.

Finally if a sea turtle is found in the net, the captain is again instructed to release them from the net before pumping fish aboard. From the evidence found there were very low incidence of interactions with turtles, mammals, and birds.

NOAA concurred that the fishers are completely compliant with all regulations regarding interactions with protected, threatened, and endangered species.

In addition research has shown that the purse seine catching method has the lowest impact on the environment and on non target and endangered species

|   |                                      |               |           |
|---|--------------------------------------|---------------|-----------|
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| Gear class         | Habitat  |            | Bycatch           |         |        |                |                     |
|--------------------|----------|------------|-------------------|---------|--------|----------------|---------------------|
|                    | Physical | Biological | Shellfish & crabs | Finfish | Sharks | Marine mammals | Sea birds & turtles |
| Dredge             | 5        | 5          | 4                 | 2       | 1      | 1              | 1                   |
| Gillnet – bottom   | 3        | 2          | 1                 | 4       | 3      | 4              | 3                   |
| Gillnet – midwater | 1        | 1          | 1                 | 4       | 4      | 5              | 5                   |
| Hook and line      | 1        | 1          | 1                 | 2       | 3      | 1              | 2                   |
| Longline – bottom  | 2        | 2          | 1                 | 4       | 3      | 1              | 2                   |
| Longline – pelagic | 1        | 1          | 1                 | 3       | 4      | 3              | 5                   |
| Pots & traps       | 3        | 2          | 4                 | 2       | 1      | 3              | 1                   |
| Purse seine        | 1        | 1          | 1                 | 2       | 2      | 3              | 2                   |
| Trawl – bottom     | 5        | 5          | 3                 | 5       | 2      | 2              | 2                   |
| Trawl – midwater   | 1        | 1          | 1                 | 3       | 2      | 2              | 2                   |

1 Very low  
 2 Low  
 3 Medium  
 4 High  
 5 Very high

These Ratings of habitat and by catch impacts for each gear class, as determined by participants of a workshop held in March 2002 in Seattle, W (Morgan and Chuenpagdee)

**E. IMPLEMENTATION**

**LEVEL OF COMPLIANCE**

*E1. There should be a framework for sanctions of violation of Laws and regulations.*

|               |  |
|---------------|--|
| <b>LOW</b>    | A framework for sanctions of violation of Laws and regulations do not exist.                         |
| <b>MEDIUM</b> | A framework for sanctions of violation of Laws and regulations do exist but do not work efficiently. |
| <b>HIGH</b>   | A framework for sanctions of violation of Laws and regulations exists and is proven to be efficient. |

**Determination**

**The US regulatory authorities have a framework of fishery enforcement.**

The United States coast guard is responsible for enforcing fisheries management regulations within the EEZ.

The five lead state agencies are:

- Florida Fish and Wildlife Conservation Commission;
- Alabama Department of Conservation and Natural Resource;
- Mississippi Department of Marine Resources;
- Louisiana Department of Wildlife and Fisheries;
- Texas Parks and Wildlife Department.

All of the above enforce the regulations within their own state territorial waters.



| LEVEL OF COMPLIANCE  |   |
|--|---|
| E2. A management system for fisheries control and enforcement should be established. |   |
| LOW  | A management system for fisheries control and enforcement is not established.                         |
| MEDIUM   | A management system for fisheries control and enforcement is established but do not work efficiently. |
| HIGH   | A management system for fisheries control and enforcement is established and works efficiently.       |

**Determination**


Each state enforces its own fishery in its territorial waters and the US coast guard enforces the regulations in the EEZ, what actions are taken to persons violating these requirements will need to be established at the on site assessment

Each Gulf state enforces its own fishery as the majority of the Menhaden fishery is found in the territorial waters of each Gulf state.

All fishing vessels are registered with the US Coast Guard, are licensed and permitted by states whose authority and empowerment is derived from the Fishery Commissions by act of US Congress.

In addition after every set the captain must complete the following report-

**CAPTAIN'S DAILY FISHING REPORT** G-90550005  
91%

|   |  |   |                        |  |                                  |    |               |    |                              |    |                                |    |            |
|---|--|---|------------------------|--|----------------------------------|----|---------------|----|------------------------------|----|--------------------------------|----|------------|
| NAME OF VESSEL<br><i>Coastal Cruise</i> |  | 1   | PLANT<br><i>Marine</i> | 2  | DATE OF SETS<br><i>4/23/90</i>   | 3  | 4             |    |                              |    |                                |    |            |
| LEFT DOCK & ANCHORAGE                   | IF DID NOT LEAVE DOCK (CHECK ONE)  |   |                        | 6  | IF NO SETS WERE MADE (CHECK ONE) |    |               | 7  |                              |    |                                |    |            |
| DATE<br><i>4/22/90</i>                  | <input type="checkbox"/> WEATHER UNFIT FOR FISHING <input type="checkbox"/> UNLOADING<br><input type="checkbox"/> LACKING SUFFICIENT CREW <input type="checkbox"/> RADIO<br><input type="checkbox"/> MECHANICAL <input type="checkbox"/> OTHER |   |                        | <input type="checkbox"/> ROUGH SEAS <input type="checkbox"/> OTHER<br><input type="checkbox"/> FOGGY<br><input type="checkbox"/> NO FISH SHOWING<br><input type="checkbox"/> NO PLANES<br><input type="checkbox"/> CHANGING LOCATION |                                  |    |               |    |                              |    |                                |    |            |
| TIME<br><i>4:20</i>                     | <input type="checkbox"/> AM<br><input checked="" type="checkbox"/> PM  |   |                        | <input type="checkbox"/> NET   |                                  |    |               |    |                              |    |                                |    |            |
| 8                                       | TIME   | 9   | FISH (000)             | 10   | PLANE NO.                        | 11 | LOCATION      | 12 | MILES AND DIRECTION TO SHORE | 13 | WEATHER CONDITIONS AND REMARKS | 14 | 15         |
| SET NO.                                 | START  | END   |                        |  |                                  |    |               |    |                              |    |                                |    |            |
| 1                                       | <i>7:00</i>  | <i>7:20</i>   | <i>135</i>             | <i>3</i>   | <i>SELF</i>                      |    | <i>55-294</i> |    | <i>1 N</i>                   |    | <i>3-75-8-10</i>               |    | <i>23</i>  |
| 2                                       | <i>7:40</i>  | <i>7:15</i>   | <i>100</i>             | <i>3</i>   |                                  |    | <i>55-294</i> |    | <i>1 N</i>                   |    | <i>3-80-8-10</i>               |    | <i>14</i>  |
| 3                                       | <i>8:00</i>  | <i>9:25</i>   | <i>40</i>              | <i>3</i>   |                                  |    | <i>55-294</i> |    | <i>2 N</i>                   |    | <i>3-80-8-10</i>               |    | <i>30</i>  |
| 4                                       | <i>10:10</i>   | <i>10:30</i>  | <i>15</i>              | <i>12</i>  |                                  |    | <i>55-294</i> |    | <i>1 N</i>                   |    | <i>3-80-8-10</i>               |    | <i>14</i>  |
| 5                                       | <i>14:00</i>   | <i>14:10</i>  | <i>65</i>              | <i>7</i>   |                                  |    | <i>55-301</i> |    | <i>1 N</i>                   |    | <i>3-80-8-10</i>               |    | <i>59</i>  |
| 6                                       | <i>15:30</i>   | <i>16:25</i>  | <i>10</i>              | <i>3</i>   |                                  |    | <i>55-294</i> |    |                              |    |                                |    | <i>09</i>  |
| 7                                       | <i>17:04</i>   | <i>17:55</i>  | <i>225</i>             | <i>12</i>  |                                  |    | <i>55-294</i> |    |                              |    |                                |    | <i>205</i> |
| 8                                       |  |   |                        |  |                                  |    |               |    |                              |    |                                |    |            |
| 9                                       |  |   |                        |  |                                  |    |               |    |                              |    |                                |    |            |
| 10                                      |  |   |                        |  |                                  |    |               |    |                              |    |                                |    |            |
| 11                                      |  |   |                        |  |                                  |    |               |    |                              |    |                                |    |            |
| 12                                      |  |   |                        |  |                                  |    |               |    |                              |    |                                |    |            |
| 16                                      |  | REMARKS & COMMENTS 17   |                        |  |                                  |    |               |    |                              |    |                                |    |            |
| DATE/TIME RETURN TO DOCK:               |  | <br>CAPTAIN'S SIGNATURE 18 |                        |  |                                  |    |               |    |                              |    |                                |    |            |

This form is required by State Law

This data is sent to the NMFS by the company every week and is used for stock assessment purposes

In addition independent samples are collected by the state marine authorities to detect the age abundance of the juvenile Menhaden.

Evidence gained from the on-site audit found that any violations to restrictions on the fishery or breaches to the regulation would be dealt with by the state issuing citations to the offending company.

**7. REFERENCES**

- R1 Everett , Dr John T. Oral Statement at Hearing on Atlantic Menhaden Conservation and Harvesting: H.R. 3840 and H.R. 3841 before the Committee on Natural Resources Sub Committee on Fisheries, Wildlife and Oceans U.S. House of Representatives, May 8,2008. Menhaden: Considerations for Resource Management
- R2 Fish Source, Menhaden, (Gulf of Mexico)  
[www.fishsource.org/fishery/menhaden%20\(gulf%20of%20mexico\)](http://www.fishsource.org/fishery/menhaden%20(gulf%20of%20mexico))
- R3 FAO. Gear Type Fact Sheet. Fishing Gear Types Purse Seine.
- R4 IFFO, The Production of Fish Meal and Fish Oil from Gulf Menhaden (Data Sheet).
- R5 Omega Protein. Vessel Assignments.
- R6 Omega Protein , Stock Biomass data.
- R7 S.J., Smith, J.W. (eds.), 2002. The Menhaden Fishery of the Gulf of Mexico, United States: a Regional Management Plan GSMC March 2002.
- R8 Texas Parks and Wildlife, 2009-2010. Texas Commercial Fishing Guide.
- R9 NOAA , 2009. Forecast for the 2009 Gulf and Atlantic Menhaden Purse Seine Fisheries and Review of the 2008 Fishing Season March 2009.
- R10 NOAA. Smith, J. W., Levi, E. J., Vaughan, D.S., Hall E.A. Gulf Menhaden, *Brevoortia patronus* ,Purse Seine Fishery, 1974-85, with a Brief Discussion of Age and Size Composition of the Landings
- R11 Vanderkooy , Steve. Gulf States Marine Commission Letter.
- R12 Vaughan, D. S., Shertzer, K. W. and Smith,J. W., 2006. Gulf Menhaden( *Brevoortia patronus*) in the US Gulf of Mexico: fishery characteristics and biological reference points for management.

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- R13 Federal regulations prepared by the NMFS Dec 2009.  
[www.nmfs.noaa.gov/sfa/sfweb/NS2PR.pdf](http://www.nmfs.noaa.gov/sfa/sfweb/NS2PR.pdf)
  
- R7 Gulf of Mexico Commercial Fisheries.  
<http://www.commercial-fishing.org/commercial-fishing-regulations/gulf-of-mexico-commercial-grouper-tilefish-individual-fishing-quota-program-referendum-a362.html>
  
- R8 Louisiana dept Wild Life and Fisheries Commercial fishing 2010  
<http://www.wlf.louisiana.gov/>

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