



## Comments on Appropriate Assessment of PA/02175/18 Temporary Tuna farming in Sikka l-Bajda

30 August 2018

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BirdLife Malta has reviewed the Appropriate Assessment (AA) for the “Proposal to consolidate temporary tuna farming area at a parcel of sea approximately 5 kilometers from the shore (in general area approved for PA/03072/17 and PA/05858/17) for a total biomass of 3,300 tonnes of fish”. With this document, we would like to express our views on the AA as well as our comments to and recommendations for the proposed mitigation measures.

### 1. Potential impacts on Avifauna

The tuna farm site is located within the boundaries of two marine protected areas and in close vicinity of another three protected areas, namely:

- Il-Bahar ta' madwar Ghawdex (MT0000112)
- Il-Bahar tal-Grigal (MT0000107)
- Ramla tat-Torri/Rdum tal-Madonna area (MT0000009)
- Kemmuna, Kemmunett, il-Ħagriet ta' Bejn il-Kmiemen u l-Iskoll ta' Taħt il-Mazz (MT0000017)
- Il-Gzejjer ta' San Pawl (Selmunett; MT0000022)

These sites are protected to safeguard Maltese Seabird species- Yelkouan Shearwaters (*Puffinus yelkouan*), Storm Petrel (*Hydrobates pelagicus melitensis*), and Scopoli's Shearwater (*Calonectris diomedea*)- that are regularly present in the areas and to use the sites as breeding ground, foraging sites and to congregate in the evening before sunset in rafts in front of the colonies during specific times throughout the year. This behaviour is important for the breeding populations and one of the criteria for which the waters of Il-Bahar madwar Ghawdex and Il-Bahar tal-Grigal are protected.

The results of the EU LIFE+ Malta Seabird Project (LIFE10 NAT/MT/090)<sup>4</sup> show that Yelkouan Shearwaters (*Puffinus yelkouan*), Storm Petrel (*Hydrobates pelagicus melitensis*), and Scopoli's Shearwater (*Calonectris diomedea*) make use of the waters of 'Il-Bahar ta' madwar Ghawdex' SPA. The new area of aquaculture activities at Sikka l-Bajda is within the rafting zone of Yelkouan Shearwaters (*Puffinus yelkouan*) which occupy their largest colony (estimated at 3% of the world population) at the cliffs of Rdum tal-Madonna (around 500 breeding pairs). St. Paul's Island forms a habitat for another colony of 30-60 breeding pairs as discovered during EU LIFE+ Malta Seabird Project (LIFE10 NAT/MT/090)<sup>1</sup>. The rafting distance from the colonies is 7 km for *Puffinus yelkouan*<sup>2</sup>, 4 km for *Calonectris diomedea*, and 1 km for *Hydrobates pelagicus melitensis*. At least ten breeding pairs of Storm Petrel (*Hydrobates pelagicus melitensis*) and up to 20

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1 This EU LIFE+ project was implemented between 2011 and 2016 by BirdLife Malta in collaboration with the Ministry for Sustainable Development, the Environment and Climate Change, the RSPB (BirdLife UK) and SPEA (BirdLife Portugal) <http://birdlifemalta.org/conservation/malta-seabird-project/>

breeding pairs of Scopoli's Shearwater (*Calonectris diomedea*) breed at Rdum tal-Madonna and make use of the waters in front of the colony to raft.

In addition to the threats pointed out in Appendix 2 "Avifauna Baseline Report" of the Appropriate Assessment, we see significant impacts potentially occurring from direct and indirect interactions between seabirds and farming operations, including:

1. **Increased abundance or supplementary food availability for predatory seabirds** such as the Yellow-legged Gull (*Larus michahellis*). Increased gull populations may impact other nesting seabirds due to predation and competition, including Shearwaters and Storm Petrels. Feeding can come from any of these sources: small fish attracted by fish farms, fish food, waste material or food scraps. Floating platforms such as vessels or sea cages, can actually attract Yellow-legged Gulls to become more permanently present in the area, thus affecting the behaviour of seabirds which can fall victim to predation. The cages are located within a rafting area important for Yelkouan Shearwaters, and therefore will be introducing this possibility.
2. **Collisions with fish farm structures**, including sea cages or vessels moored at night. The presence of a semi-permanently moored vessel could potentially impact individuals of these seabird species through collisions, attraction to light and disorientation due to inappropriate lighting on service vessels (particularly during cage construction and fish harvesting phase), pens or navigation markers at night. Malta's seabird species return to their colonies at night with light pollution being a major threat causing disorientation of the seabirds. Collision rates could be greatly increased by unmasked, bright lights. Collisions can lead to increased stress causing vomiting of collected forage or death of the seabirds, which can be particularly threatening between May and July. During this critical period, Yelkouan Shearwater chicks have hatched and their parents go out to sea foraging being the only food source for their chicks. Vomiting of forage is thereby depriving those nestlings of a single feed or death of the chick in case the parent bird will not come back to the breeding ground. Therefore, it is important to identify if seabirds strand during their journey especially during breeding period between the times of sunset and sunrise.
3. **Risk of oiling** when seabirds rest or raft in the waters around the fish farms where oil slicks are present. Fish oil affects the waterproofing of seabird feathers putting in risk their lives. Oil slicks and fish slime are nowadays a common occurrence and impact resulting from fish farms as a result of the intense and at times inappropriate methods of feeding farmed fish. Such a risk should be quantified as it could lead to occasional situations where whole rafts of seabirds might be affected. Once a seabird's waterproofing is compromised this could spell death to these birds.
4. **Entanglement in cage mesh**, predator nets or protective bird netting due to diving activities of the seabirds. This is mentioned on page 105 of the AA and evaluated as impacts being "not significant to minor", however, the assumptions are not based on any available data. In our view, there is a need for these assumptions to be scientifically confirmed before such conclusions can be made. Mitigation measures to prevent entanglement of seabirds in the nets are listed below

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<sup>2</sup> See e.g. Raine et al. (2010): Rafting behavior of Yelkouan Shearwater *Puffinus yelkouan* breeding at Rdum tal-Madonna, Malta. Il-Merill 32, Malta.



5. Attraction of prey to vessels or sea cages due to **Fish Aggravation Device (FAD) effects** and attraction to the fish stock. Similar to point 1, tuna carried in the cages as well as an accumulation of food supply can attract other pelagic species to the cages. It needs to be researched how this can effect the site's ecological sensitivity.
6. **Displacement of seabird populations as a result of fish farming activities.** Pen location can have an impact on seabird behaviour using the area for rafting before coming back to their colonies causing a possible displacement of the rafting area, or even the colony. The possibility of such an impact needs to be quantified and evaluated.

BirdLife Malta therefore sees the strong necessity to carry out scientific research on the relationship between seabirds and aquaculture projects as well as appropriate seabird monitoring during deployment and operational phase of aquaculture farms during the timeframe for the approved temporary relocation of the fish farms. In our view, it is important to close the current scientific gap on potential interactions between marine aquaculture and seabird colonies as well as their habitats, especially those present in the area of Marine Special Protection Area Il-Bahar ta'madwar Ghawdex and Marine Special Area of Conservation Zona fil-Bahar fil-Grigal ta' Malta.

## 2. Mitigation measures

Appropriate mitigation measures need to be set up to ensure safeguarding the protected site's conservation objectives and ecological sensitivity while at the same time safe operations of fish farm activities in marine protected areas can be guaranteed. This can be achieved by gathering comprehensive information on species present in the area and the relationship between seabirds and the aquaculture farms, particularly of Yelkouan Shearwater due to their extend of breeding pairs in the area. As pointed out in section one, research needs to cover Seabird's (1) rafting behavior, (2) attraction to fish farms, (3) impact of fish oil, (4) diet and increased abundance of marine raptors due to fish aggregation, and (5) impact of lighting. Identifying interactions between seabirds and aquaculture and assessing potential ecological risks and ecological change is furthermore necessary to assess the relocation scenario of the tuna pans and whether any changes in seabird behaviour ensue as a result of the current location of the cages.

To minimise any potential negative impacts of the interactions between fish-farming operations and seabirds, a practical seabird-monitoring program has to be developed and applied throughout the temporary relocation period of the fish farms, which has already started in 2018. In the long term, seabird monitoring has the intention to observe and trace population changes, such as behavioural and reproduction chances as well as changes in number of the seabird populations and adult survival nesting in St.Paul's Island and Rdum tal-Madonna. Given the temporary relocation of the fish farms, it is however, the aim to assess whether or not local populations of breeding seabirds show any important changes in the short term during the presence of fish farm pens in the area.



Given that the tuna pans have already been relocated to the actual site before the Appropriate Assessment was carried out, proposed mitigation is limited to measures tailored to the management of the site.

**For seabird-monitoring, we recommend to carry out the following mitigation measures:**

1. **GPS tracking** of adult Yelkouan shearwaters as a method to identify core areas the birds make use of and to identify if changes in their behaviour close to fish farms is exhibited – either when rafting or on how these seabirds approach their colonies from foraging sites elsewhere. Yelkouan Shearwaters can be tagged from the colonies of Rdum tal-Madonna and potentially St. Paul’s Islands. Both sites are previously studied breeding sites of Yelkouan Shearwater as pointed out in section one.
2. **Boat surveys** to observe seabird behaviour on site during tuna season in Malta (approximately April to November). Monitoring of the presence and activity of seabirds around aquaculture structures with observations during different times of the season and day to understand behavioural changes that will ideally lead to species-specific management strategies. In the case that farm structures are maintained in the water outside the tuna season, disturbance or other impacts on seabird have to be furthermore monitored.<sup>3</sup>
3. To avoid seabird collision while at the same time providing safety at sea for seafarers, we recommend to develop a **lighting management plan**. This includes an appropriate design of light horizon and wavelength of all 30 light installed (6 permanent and 24 temporary light sources) to avoid adding on to the light sources already present in the area not least due to Malta’s bunkering zone Area 1. The level of activity of Yelkouan Shearwaters is strongly correlated with the moon phase, activity is highest on moonless nights and lowest (almost negligible) on brightly lit nights. This pattern of activity changes throughout the breeding season, relating to the breeding duties of the birds, which needs to be taken into account.

We understand that appendix 3 “Light Specifications” indicate the light types that are being used on the fish farms of which some are permanent lights and some are temporary lights. Light receptors of seabirds and other pelagic species have a different range perceiving wavelengths in the light spectrum making these species sensitive to especially white light during the night. Red lights are most suitable to avoid seabirds being attracted to and disoriented by these light sources, therefore, we recommend to deploy red lights as permanent and temporary light sources on the fish farms. If this places a problem on seafarer safety the next best solution would be to deploy yellow light sources indicating the area as single marked danger points and thereby collision with vessels should be avoided. We agree to proposed mitigation measures of reducing the use of lines and rigging across the vessels to prevent entanglement in case of collision of birds so that disorientation can be avoided (see reference 6).

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<sup>3</sup> Ministry for Primary Industries (2013): Literature Review of Ecological Effects of Aquaculture. Chapter 6 Seabird Interactions. Wellington, New Zealand.

The current location of the aquafarms overlaps with known rafting areas and thereby flight paths of Yelkouan Shearwater<sup>4</sup> and reports from other sites outside Malta have recorded colliding seabirds with fishing vessels<sup>5</sup>. Given that video monitoring is mentioned as one of the proposed mitigation measures, we recommend to deploy Digital Motion Detector Cameras with time-lapse and infrared capabilities on poles around the fish pens with coverage of the surface areas of the sea cages to observe changing behaviour and monitor net entanglements.<sup>6</sup> Periodic time-lapse imagery should be programmed to monitor for seabird activity on sea cage infrastructure. The cameras will record interaction with seabirds such as roosting (diurnal and nocturnal), foraging (day and night) or gathering over cages. The footage need to be analysed on a regular basis.

4. As this has been identified in the AA as well, we recommend to include research of Yelkouan Shearwater's **feeding behaviour and diet by collecting and analysing regurgitate samples and faecal matters** (due to their abundance in the area) as part of the monitoring programme. Fish feed used at the fish farm has the potential to attract foraging seabirds as it provides an additional nutrition source. These can be attractive especially to gulls potentially leading to an increased species population, which can place a potential threat to other seabirds due to gull's predator behaviour. Given that there is no data available on this concern so far, it is important to close the data gap to fully understand any chance of feeding behaviour.
5. Fish farm operators should also be **briefed and trained on how to handle seabirds** should the need arise to rescue such birds. A protocol would need to be established with ERA, and possibly with the advice of BirdLife Malta of how such cases would be handled and reported.

### 3. General comments on the Appropriate Assessment

According to the Habitats Directive that is reflected in The Flora, Fauna and Natural Habitats Protection Regulations (S.L 549.44 ) of national legislation, an Appropriate Assessment needs to be carried out before a decision over the discussed development can be concluded. Opening a public consultation process for applications that have already been approved last year and after the installation of tuna farm cages already took place several months ago is breaches the above-mentioned legislation.

Detailed descriptions on the protected sites of il-Bahar madwar Ghawdex (MT0000112) and il-Bahar tal-Grigal MT0000107 are lacking, however, these two sites are the most crucial to the Appropriate

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4 See e.g. Raine et al. (2010): Rafting behavior of Yelkouan Shearwater Puffinus yelkouan breeding at Rdum tal-Madonna, Malta. Il-Merill 32, Malta.

5 Montevicchi (2006): Influences of artificial light on marine birds. Ecological consequences of artificial night lighting. Washington DC, United States of America.

6 Surman & Dunlop (2015): Impact Assessment of aquaculture on seabird communities of the Abrolhos Islands, to support the Mid-West Aquaculture Development Zone proposal. Halfmoon Biosciences. Ocean Beach, Australia.



Assessment as they are the sites most significantly impacted by the temporary fish farms. Providing information over the marine ecology and its value in terms of ecosystem services are the baseline to understand the reasons why it is important to protect the habitat and its biodiversity.

On page 90 and 91, the AA evaluates the overall level of impact on pelagic species be not significant to minor although detailed data on the pelagic fauna especially on migration that occur within the Area of Study are lacking. Migrating species that are mentioned in the areas' vicinity include pelagic fish, turtles and cetaceans. The study misses out to mention seabirds at this point completely, although as highlighted above, there are plenty of records that several species of seabirds migrate in the area.