

## Undulate Ray Status Review Peer Report: ID 273

### Peer Reviewers

We solicited review of the Status Review Report from six potential reviewers. Two people agreed to be reviewers and provided reviews. Reviewer comments are compiled below from comments on drafts of the manuscript and are not in the order of the reviewer identification list below.

- Dr. Jim Ellis, Centre for Environment, Fisheries, and Aquaculture Science: [jim.ellis@cefas.co.uk](mailto:jim.ellis@cefas.co.uk)>
- Dr. Jack Musick, Virginia Institute of Marine Sciences: [jmusick@vims.edu](mailto:jmusick@vims.edu)

### Comments

This looks ok. You did a good job on the Lit. I have made several track changes on the ms.

Reference incubation period—data 91 days were provided.

Reference Tagus Estuary as important habitat for the undulate ray—presence does not imply importance

Reference shift in diet at 55 cm and 75 cm needs clarification.

Reference English Channel catch needs clarification if ‘caught’ includes landed.

Reference Tagus estuary abundance is 20 years old and may not reflect current status of the population.

Reference vulnerability given undulate ray size, referred to Dalvy work.

Reference International Game Fish Association data, ‘trophy’ is a record of the largest individual recorded caught by recreational fisheries, regardless of whether a species is targeted or not. So its listing by IGFA has little bearing on the ray’s conservation status.

Reference International Game Fish Association data, although trophy fishing is often a catch and release program, many fish die after being released (Shiffman *et al.* 2014), this should be substantiated with respect to rajids. Pelagic game fish may die after release, but skates in shallow water probably have a high survival following release. Indeed this paper actually writes “a variable proportion (depending on gear, angler behavior, environmental conditions), and intrinsic biotic factors, will suffer post-release mortality” - this is different to many die.

Reference, The undulate ray is a trophy fish, and although trophy fishing is a catch and release program, many fish die after being released, No justification for this sentence with respect to undulate ray.

Reference qualitative risk analysis of demographics, life-history characteristics are intrinsic. This means the species is at greater risk of extinction regardless of outside factors and should be assigned a category of medium to high likelihood of contributing to the extinction risk.

Reference diversity, where data are poor the category should be 'unknown' not 'very low'

Reference specimens have been found in the southern North Sea and Bristol Channel, but they are rare (Ellis *et al.* 2012), use reported and replace rare with, but these areas are outside the normal distribution range.

Reference Figs. 3 and 4 not accurate for present range.

Reference two different populations may exist in the Peniche region on the central coast of Portugal, may be an artifact of differences in data analysis methods or low sample sizes.

Reference size at maturity in the English Channel, the authors assumed this value based on another study. Use McCully *et al.* (2012) for more up-to-date length at maturity for undulate ray in the English Channel. Smallest mature fish at 79-80 cm.

Reference sex ratios, See **ELLIS, J. R., MCCULLY, S. R., SILVA, J. F., CATCHPOLE, T. L., GOLDSMITH, D., BENDALL, V. AND BURT G. (2012).** Assessing discard mortality of commercially caught skates (Rajidae) – validation of experimental results. Report to Defra, 142 pp.

Reference data on mortality/survival rates for the undulate ray, See **ELLIS, J. R., MCCULLY, S. R., SILVA, J. F., CATCHPOLE, T. L., GOLDSMITH, D., BENDALL, V. AND BURT G. (2012).** Assessing discard mortality of commercially caught skates (Rajidae) – validation of experimental results. Report to Defra, 142 pp.

Reference northwest Africa data, see Lloris, D. and Rucabado, J. (1979). *Especies ictiológicas de las expediciones pesqueras realizadas en la plataforma del NW de África (1971–1975). Resultados Expediciones Científicas B/O Cornide*, 8 : 3–151.

Reference counts of egg cases recorded on beaches, Studland and Swanage Bays in the English Channel are important nursery areas for the undulate ray (Dorset Wildlife Trust 2010), while a couple of records of recently hatched juveniles have been reported from these sites, more juveniles have been reported from the east of the Isle of Wight, not these areas.

Reference to Prior to 2009, the undulate ray was often confused with the cuckoo ray (*Leucoraja naevus*), not sure how these two species could be confounded. I would suggest you simply state that data were confounded in mixed skates and ray data.

Reference Roger and Ellis 2000 study, I wouldn't advocate using this study for undulate ray, as the fishing grounds studied were outside the main range of undulate ray.

Reference Table 1, This table is probably outdated for undulate ray now; I'd probably change English Channel to 4-5, west of Ireland to 4

Reference English Channel surveys; English beam trawl surveys from the English Channel are getting confounded. The eastern English Channel survey (1993 to present) shows low and variable catch rates, and undulate ray were absent in 2006 and 2007. Since then, catches have improved (see ICES, 2014 advice for undulate ray for up-to-date figure. Surveys in the western English Channel have also shown low and variable catch rates (Figure 7 below), you can cite: BURT, G. J., ELLIS, J. R., HARLEY, B. F. AND KUPSCHUS, S. (2013). The FV Carhelmar beam trawl survey of the western English Channel (1989–2011): History of the survey, data availability and the distribution and relative abundance of fish and commercial shellfish. *Science Series Technical Report*, CEFAS Lowestoft, **151**: 139 pp.

Reference Figure 7, Graph for VIIe can be updated (Burt et al., 2013) (see report 151 on <http://www.cefass.defra.gov.uk/publications-and-data/scientific-series/technical-reports.aspx>)

Reference French landings data, add “However, not all French fisheries reported skate landings to species.”

Reference, mortality is generally high in skates and rays discarded from fishing gear (see Ellis *et al.* 2010); That paper does not say that. The fishery of concern was offshore fisheries taking common skate, as these have a long soak time. Studies on inshore vessels (which operate on the main undulate ray grounds) have shown high survival of skates.

Reference scientific methodology and that mortality, mortality may be higher under natural conditions; This should be justified. I would have felt that mortality would potentially be higher in captivity, as you also have potential captive stress and handling etc.

Reference, Mortality may also occur as a result of tags used in scientific research activities, but the level of research activities using these tags is unknown; Mortality from any scientific tagging studies will be negligible in comparison to fishing activities, but at the moment the report seems to imply that science is having a detrimental effect....

Reference To date, there is no indication that the regulations will be revised to remove the undulate ray from the prohibited species list; It was removed from the prohibited species list for some areas in 2014, albeit as a species that should not be retained on board

Reference cold-water dependence; the undulate ray is not cold-water dependent, and warming temperatures in the English Channel may actually benefit the undulate ray.

Reference spatial structure and connectivity extinction risk; There is concern over the stock off SW Ireland, as it may be more isolated than other stocks. Can you have a range of values, for example ‘low’ (main areas on continental seaboard) to ‘moderate’ (stocks at limits of distribution, e.g. off Ireland).