

Name of indicator	4.15 Indicator on condition of waterbirds
Type of Indicator	Pressure indicator
Author(s)	Ainars Auniņš, Leif Nilsson, Andres Kuresoo, Leho Luigujõe, Antra Stīpniece
Description of the indicator	<p>A body condition index based on condition of the pectoral flight muscles and the presence and quantity of subcutaneous and intestinal fat depots.</p> <p>Body condition of seabirds is measured by sampling by-caught seabirds as these probably represent a good subset of the whole population in the respective area (unlike beached birds that might rather represent diseased individuals). Due to high water content in the feathers of the drowned birds, the body mass (which represents a good indicator of body condition in other circumstances) cannot be measured with sufficient accuracy.</p> <p>The index supplies general information on overall physical condition or the likely cause of death, e.g. starvation. Possible supplemental data to be collected (Leopold <i>et al.</i> 2000, van Franeker 2004): - information on injuries, oiling and entanglement - condition of organs (score system) See van Franeken 2004, van Franeken, Camphuysen 2007, and Laboch, Hayes 2012.</p>
Relationship of the indicator to marine biodiversity	The indicator reflects condition of typical species populations. It primary responds to the following pressures and drivers: removal of prey, disturbance, disease, hazardous substances.
Relevance of the indicator to different policy instruments	<p>MSFD descriptor 1 (species level/population condition and habitat level/condition of typical species).</p> <p>Birds Directive (Article 12 requires reporting on existing impacts and threats to all regularly occurring wintering marine waterbird species).</p>
Relevance to commission decision criteria and indicator	<p>1.3. Population condition</p> <p>1.3.1. Population demographic characteristics (e.g. body size or age class structure, sex ratio, fecundity rates, survival/ mortality rates)</p> <p>1.6.1. Condition of the typical species and communities</p>
Method(s) for obtaining indicator values	<p>Field data collection: Three components are evaluated for every collected specimen:</p> <ol style="list-style-type: none"> 1. condition of the pectoral flight muscles 2. presence and quantity of subcutaneous fat depots 3. presence and quantity of intestinal fat depots <p>These are scored on a scale ranging from 0 to 3.</p> <p>Subsequently, these scores are summed up to a condition index. Thus total score for each bird can be in range 0 to 9.</p> <p>In order to describe the overall condition of birds the following system for interpreting the scores has been suggested (Van Franeker 2004):</p> <p>0-1 as mortally emaciated,</p> <p>2-3 as critically emaciated,</p> <p>4-6 as moderate body condition and</p> <p>7-9 as good body condition.</p>
Documentation of relationship between indicator and pressure	The indicator primary responds to the following pressures and drivers: removal of prey, disturbance, disease, hazardous substances
Geographical relevance of indicator	<ol style="list-style-type: none"> 2. Regional 3. National waters
How Reference Conditions (target values/thresholds) for the indicator were obtained?	The target condition score is in range from 7 to 9, meaning that all birds are in good physical condition. The actual GES threshold still needs to be defined. Meanwhile trend based GES reference conditions can be used - if there is a significant negative trend in body condition index and the actual indicator values are driving away from the GES target range

	(7 - 9), the indicator cannot be at GES.
Method for determining GES	Currently GES levels have not been set. More ecological studies are needed to set GES boundary value of the target. While precise GES levels cannot be set, an existence of negative trend in this indicator and values outside the target range (7 - 9) suggest that the indicator can be considered as not being at GES.
References	<p>Labocha M.K., Hayes J.P. 2012.: Morphometric indices of body condition in birds: a review. J Ornithol 153: 1-22.</p> <p>van Franeker J.A. & C.J. Camphuysen 2007. Condition manual: the physical condition of stranded seabirds. Technical documents 4.1, Handbook on Oil Impact Assessment, version 1.0. Online edition, www.oiledwildlife.eu</p> <p>van Franeker J.A. 2004. Save the North Sea Fulmar-Litter-EcoQO manual part 1: collection and dissection procedures. Wageningen.</p>