

Monitoring – A SNH Perspective

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- *SNH is a Government agency responsible to Scottish Government Ministers and through them to the Scottish Parliament.*
- *Our **statutory purposes** are set out in the Natural Heritage (Scotland) Act 1991. They are to:*
 - *secure the conservation and enhancement of Scotland's natural heritage;*
 - *foster understanding and facilitate enjoyment of it; and*
 - *encourage its sustainable use.*

*Looking after all of Scotland's nature and landscapes,
across all of Scotland, for everyone*



- *We have duties under other legislation, including*
 - *the Wildlife & Countryside Act 1981,*
 - *the Land Reform (Scotland) Act 2003*
 - *the Nature Conservation (Scotland) Act 2004 and*
 - *the forthcoming Scottish Marine Bill*
- *We also play a key role in helping the Scottish Government meet its responsibilities under European environmental laws, particularly in relation to the Habitats and Wild Birds Directives.*



- SNH views climate change as one of the most serious threats over the coming decades to Scotland's natural heritage.
- We therefore **strongly** support the development of renewable energy if it replaces the burning of fossil fuels. Our roles are mainly to:
 - offer advice to developers to help them select appropriate locations and assess the likely impacts;
 - act as a statutory adviser to local authorities and the Scottish Government, giving our advice on renewable energy project applications and associated Environmental Statements.



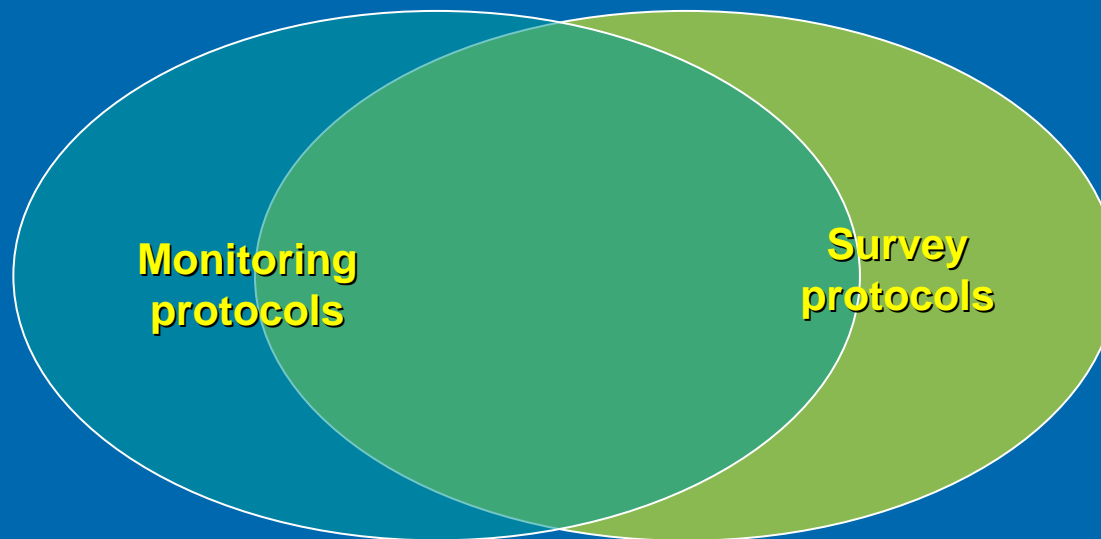
- **Renewable energy policy statement (2001)**
 - Strongly supportive of all renewables
 - Seek a strategic approach
- **Marine renewables and the natural heritage (2004)**
 - Strongly supportive of marine renewables
 - Steer development away from sensitive locations until impacts are understood
 - Important to monitor early deployments



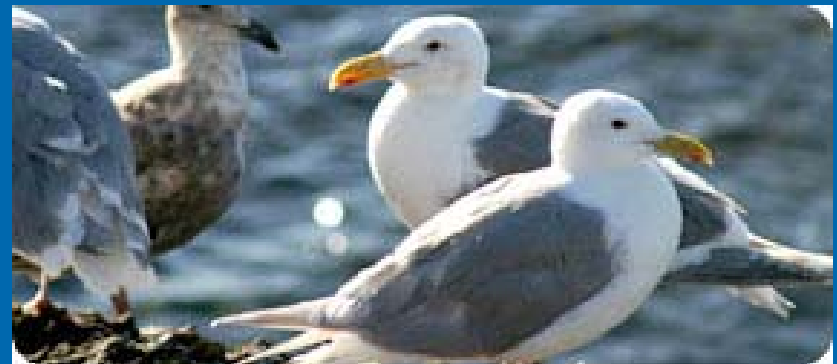
- The intermittent (regular or irregular) surveillance to ascertain the extent of compliance with a predetermined standard or degree of deviation from an expected norm (*For example a baseline*)
- Source: Global Biodiversity Assessment
 - Implies periodicity in measurements; and
 - Evaluation against a norm (such as a baseline or reference state)
- Survey or surveillance projects may provide data useful for monitoring.



- Monitoring is not the same as survey;
- Protocols (e.g. field survey) and analytical techniques may or may not overlap but their purpose is different;
- Surveys may provide baseline for monitoring, but work for monitoring programmes will often be different to work for survey and assessment (e.g. Environmental Impact Assessments and where required, Natura appropriate assessments).



- Legislative requirements (e.g. Natura Directives, ELD, WFD);
- Potential impacts on other activities (e.g. fishing)
- Conservation concerns for particular species and/or habitats; and
- Need to resolve uncertainty surrounding impacts from marine renewable energy devices.



Monitoring should:

- Provide data with sufficient power to detect a change throughout the development process and maybe beyond;
- Determine whether any changes detected are associated with the activity and/or development;
- Provide a basis for the evaluation of the effectiveness of any mitigation measures; and
- Provide a *post hoc* evaluation of recommended surveillance techniques and correct identification of impacts.



➤ Habitats

- Primarily benthos, where change may be due to physical disturbance, changes in hydrodynamic regime and/or indirect effects through alteration of trophic structures and functioning.

➤ Species

- Wide range of taxonomic groups, but especially vertebrates such as seals and birds with focus on species of conservation importance, legislative protection (EPS) and those considered sensitive to potential impacts



What information might we need to know for monitoring likely impacts?

- Species & habitat distribution;
- Habitat extent, especially rare or sensitive habitats;
- Species abundance and age structure;
- Use of development areas by species;
- An understanding of factors that affect species & habitats such as environmental influences; and
- Specific parameters, such as how to detect mortality e.g. from collisions



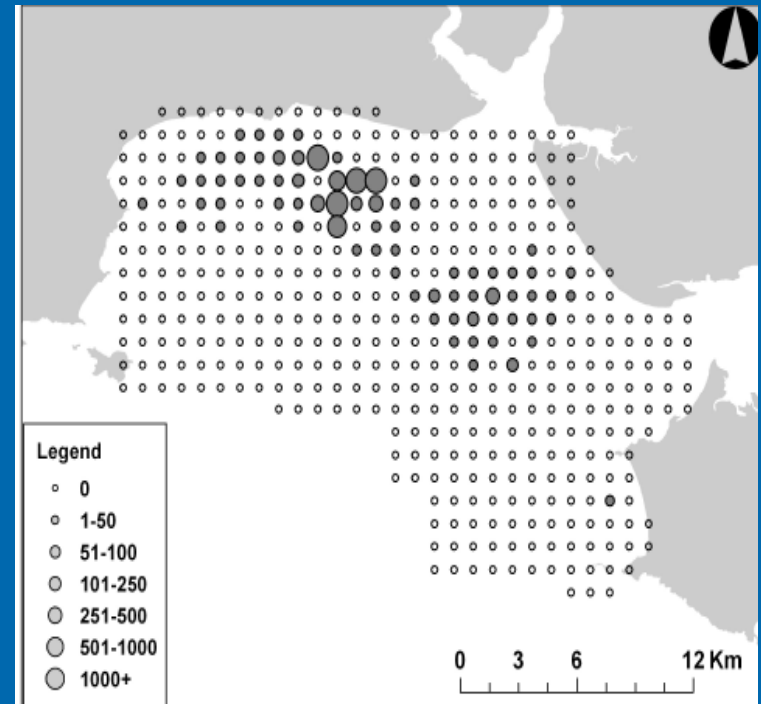
Much of the above can be obtained using the same methods as are employed for pre-application surveys

- The requirement for a baseline assessment is essential. This requires primary survey, which may overlap with survey needs for EIA (but not necessarily);
- Standard approach is BACI – Before-After-Control-Impact though other approaches (such as gradient analyses) are possible;
- Methods should preferably be simple, repeatable and subject to limited change over time;
- Prior assessment of the degree of change detection is required, along with the statistical power to detect that level of change.



Monitoring: –

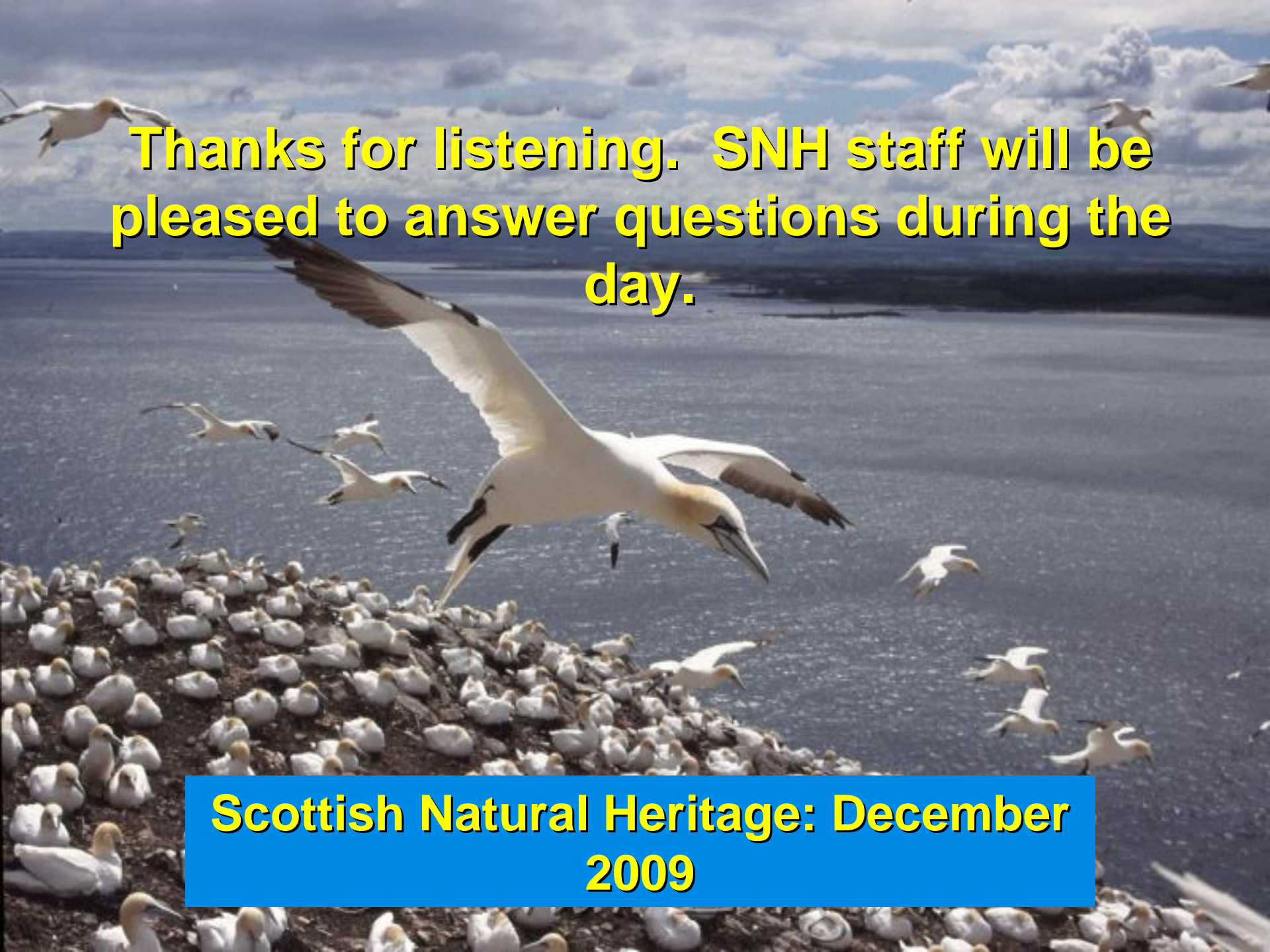
- Should be enough to address residual concerns and uncertainties over identified impacts;
- Should be enough to address specific legislative requirements (including any consent agreements); and
- Should be enough to make robust predictions to inform future development activity.



Monitoring cannot:

- Detect impacts that were not previously identified (species or habitats);
- Detect change that falls below the level of statistical power that methods dictate;
- Identify causal factors driving change (though these might be implied); and/or
- Determine what action is needed to address any changes (especially adverse changes).



A large colony of seabirds, likely gannets, is gathered on a rocky shore. Many birds are in flight, soaring over the ocean. The sky is filled with white clouds. The text is overlaid on the upper portion of the image.

Thanks for listening. SNH staff will be pleased to answer questions during the day.

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