

Marine recreation evidence briefing: windsurfing and kitesurfing

This briefing note provides evidence of the impacts and potential management options for marine and coastal recreational activities in Marine Protected Areas (MPAs). This note is an output from a study commissioned by Natural England and the Marine Management Organisation to collate and update the evidence base on the significance of impacts from recreational activities. The significance of any impact on the Conservation Objectives for an MPA will depend on a range of site specific factors. This note is intended to provide an overview of the evidence base and is complementary to Natural England's *Conservation Advice* and *Advice on Operations* which should be referred to when assessing potential impacts. This note relates to windsurfing and kitesurfing (boardsports with a sail). Other notes are available for other recreational activities, for details see *Further information* below.

Windsurfing and kitesurfing

Definition

Wind-based watersports using a kite or sail to propel the board. This note does not include surfing or land-based kite powered activities (eg kite buggying) which are covered in separate notes.

Distribution of activity

Windsurfing and kitesurfing are generally undertaken close inshore (typically within 1-2 km of the coast), although racing activity may extend further offshore. While windsurfing and kitesurfing are undertaken widely along the UK coast, popular areas in England include the South, South East and South West Coasts of England.

Levels of activity

These activities are undertaken all year round although participation is likely to be higher during the warmer summer months. The Watersports Participation Survey 2015 (Arkenford, 2015) estimated 109,000 people participated in windsurfing activities and 36,000 people participated in kitesurfing activity in the UK in 2015.

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Pressures

The note summarises the evidence on the pressures and impacts of the activity related to participating in the activity in the marine environment. The direct pressures considered to arise from each functional aspect of the activity are shown in Table 1 and the potential biological receptor groups affected by the pressures are shown in Table 2.

The information presented on pressures associated with the activity builds upon, and is complementary to, Natural England's Conservation Advice and Advice on Operations which should be referred to for MPA specific information and sensitivities of specific MPA features to those pressures¹.

The main pressure-receptor impact pathways arising from these activities are considered to be:

- Visual disturbance, of marine mammals and birds, related to the presence of the person and equipment during the activity.

Any surface abrasion/disturbance to the substrate surface in intertidal and shallow subtidal habitats arising from participants entering the sea with their equipment has been considered to be negligible. This is based on participants generally carrying their equipment (board) into the sea and any contact of the equipment with the seabed in these areas (eg dragging the board in or out of the sea) being minimal in terms of weight, duration and frequency. The pressure arising from participants walking across the shore and into the seas has also been considered to be negligible, for example, compared to the larger numbers of people undertaking general leisure activities at a beach (see *General beach life* note).

Underwater noise associated with these wind-based watersports (such as turbulence created through board movement) will be below natural ambient levels caused by hydrodynamic processes such as tidal currents or waves. Similarly, above water noise changes caused by the activity (such the movement of a sail or kite) will be barely audible against background sources such as wind or waves crashing. Hence both of these pressures have been considered to be negligible and are not considered further.

For Tables 1 & 2 see page 11

Impacts

Where an impact pathway has been identified between the pressures arising from the activity and a biological receptor group, a summary of the evidence of impacts has been presented below.

Fish

Visual disturbance

Basking sharks are the only species of fish in UK waters with the potential to be disturbed through the presence of recreational surface activities such as windsurfing and kitesurfing. This is because the foraging and courtship behaviour of this species occur at the surface in UK waters (particularly South West England in English territorial waters) seasonally in the spring and summer (Sims, 2008).

¹ <https://www.gov.uk/government/collections/conservation-advice-packages-for-marine-protected-areas>

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Specific research on the impacts of windsurfing and kitesurfing on basking sharks is limited. It is generally accepted that the stationary viewing of basking sharks in watercraft is unlikely to elicit a disturbance response. However, intentionally directing a windsurfing or kitesurfing board very close to a basking shark (particularly at angles which block the path of a shark) could cause a startle response (often involving the shark thrashing the tail or diving) (The Shark Trust, 2007; Kelly *et al.*, 2004). The effects will be most severe for repeated disturbance events which could cause a temporary displacement and a disruption in foraging activity. Large aggregations of sharks (particularly those involved in courtship) are considered particularly vulnerable (The Shark Trust, 2007).

Marine mammals

Visual disturbance

There is limited information specifically on the impacts of windsurfing or kitesurfing on marine mammals.

Cetaceans (whales and dolphins) have been observed showing behavioural responses to the presence of other non-powered craft (Williams *et al.*, 2011; Lusseau, 2006; Lusseau, 2003). Given the high speeds associated with windsurfing and kitesurfing there is a potential for similar effects with these activities. However, it is unlikely that windsurfing or kitesurfing will be used to deliberately watch or interact with cetaceans. Furthermore, occasional disturbance stimuli caused by these activities is unlikely to cause long-term impacts although persistent disturbance (linked to a high level of intensity), particularly within critical habitat has the potential to cause longer term effects.

Seals which are hauled out on land, either resting or breeding, are considered particularly sensitive to visual disturbance (Hoover-Miller *et al.*, 2013; Wilson, 2014). The level of response of seals is dependent on a range of factors, such as the species at risk, age, weather conditions and the degree of habituation to the disturbance source. Windsurfing and kitesurfing activity is unlikely to be focused specifically on watching seals and will therefore typically not travel as close to colonies as some other recreational activities. However, windsurfing and kitesurfing would be expected to cause disturbance at similar or greater distances to other non-powered craft (Wilson, 2014).

Birds

Visual disturbance

Windsurfing craft have been found to cause disturbance responses in waterbirds at distances of 50 – 700 m depending on the species (Koepff and Dietrich, 1986; Masden, 1998). Kite-surfing and windsurfing were identified in one study as causing relatively high levels of disturbance, including the recording of single events having a disproportionately large effect (displacement of large numbers of birds over non-negligible time period) (Liley *et al.*, 2011).

In general, regular and defined human movements are less disturbing than erratic and random movements to waterbirds (Smit and Visser, 1993). In this respect, windsurfing and kite surfing creates unpredictable, high speed movements (through the zig zag nature of these activities) which have the potential to elicit a high disturbance response in birds. Research found that windsurfing caused a disturbance response at greater distances than kayaks. However, the same study also found that due to the ability to approach closely to high-tide roosts, kayaks and small sailing boats recorded a higher disturbance frequency than windsurfers (Koepff and Dietrich, 1986). Other research found that waterfowl permitted the least approach by windsurfing craft (compared with boats or mobile punts) before a behavioural response was observed.

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In general, the primary responses observed are likely to include increased vigilance, avoidance walking and flight responses. The level of response will vary depending on a range of factors including the frequency of disturbance and the level of habituation as a result of existing activity (IECS, 2009).

Some disturbance effects may have more direct negative impacts (loss or failure of eggs or chicks leading to decreased breeding productivity) to birds than others (temporary displacement from feeding or roosting areas leading to increased but non-lethal energetic expenditure).

Repetitive disturbance events can result in possible long-term effects such as loss of weight, condition and a reduction in reproductive success, leading to population impacts (Durell *et al.*, 2005; Gill, 2007; Goss-Custard *et al.*, 2006; Belanger and Bedard, 1990).

Assessment of risk of significant impact

The following assessment uses the evidence base summarised above, combined with generic information about the likely overlap of the activity with designated features and the sensitivity range of the receptor groups, to provide an indication of the likelihood of:

- i) an observable/measurable effect on the feature group; and
- ii) significant impact on Conservation Objectives based on the effect on the feature group.

The assessment of significance of impacts has been based on the potential risk to the achievement of the conservation objectives for the features for which a site has been designated. The assessment is made using expert judgement and is designed to help identify those activities that are likely to be of greatest or least concern, and, where possible, suggest at what point impacts may need further investigation to determine potential management requirements within MPAs to reduce the risk of an adverse effect on the integrity of the site. Note, the assessment only considers the impact pathways considered in the evidence section (pressures which were considered negligible in Tables 1 and 2 are not considered in this assessment).

The outputs are shown in Table 3. The relative ratings of likelihood of significant impact on Conservation Objectives (COs) are defined as:

- Low – possible observable/measurable effect on the feature group but unlikely to compromise COs.
- Medium – observable/measurable effect on the feature group that potentially could compromise COs.
- High – observable/measurable effect on the feature group that almost certainly would compromise COs.

The relative risk ratings are based on the activity occurring without any management options, which would be considered current good practice, being applied. The influence that such management may have on the risk rating is discussed in the *Management options* section below.

It must be noted that the above assessment only provides a generic indication of the likelihood of significant impacts, as site-specific factors, such as the frequency and intensity of the activity, will greatly

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influence this likelihood. As such, further investigation of the risk to achieving COs will need to be done on a site specific basis, considering the following key site-specific factors:

- the spatial extent of overlap between the activity/pressure and the feature, including whether this is highly localised or widespread;
- the frequency of disturbance eg rare, intermittent, constant etc.;
- the severity/intensity of disturbance;
- the sensitivity of specific features (rather than the receptor groups assessed in Table 3) to pressure, and whether the disturbance occurs when the feature may be most sensitive to the pressure (e.g. when feeding, breeding etc)
- the level of habituation of the feature to the pressure; and
- any cumulative and in-combination effects of different recreational activities.

For Table 3 see page 12

Management options

Potential management options for marine recreational activities (note, not specific to windsurfing and kitesurfing) include:

On-site access management, for example:

- Designated areas for particular activities (voluntary agreements or underpinned by byelaws).
- Provision of designated access points eg slipways, in locations likely to be away from nature conservation access (voluntary or permit condition or underpinned by byelaw).

Education and communication with the public and site users, for example:

- signs, interpretation and leaflets
- voluntary codes of conduct and good practice guidance
- wardening
- provision of off-site education/information to local clubs/training centres and/or residents.

Legal enforcement of, for example:

- byelaws which can be created by a range of bodies including regulators, Local Authorities and landowners (collectively referred to as Relevant Authorities); and
- permitting or licence conditions.

Specific examples of management measures which have been applied to windsurfing and/or kitesurfing are described further in a Management Toolkit which can be accessed from [Marine evidence > Marine recreational activities](#) and include:

- Codes of conduct; and
- Voluntary zonation (launch zones and exclusion zones) some of which are 'self-policed' by local clubs.

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Based on expert judgement, it is considered that where management measures, which would be considered current good practice, are applied to windsurfing and kitesurfing activities, adhered to and enforced, the likely risk of significant impact on a site's Conservation Objectives would be **Low** in relation to all activity/pressure impact pathways.

For further information and recommendations regarding management measures, good practice messaging dissemination and uptake, refer to the accompanying project report which can be accessed from [Marine evidence > Marine recreational activities](#).

National governing body and good practice messages for windsurfing and kitesurfing

National governing body

British Kite Sports is the National Governing Body for all forms of kitesurfing and other kite sports (powerkite, kite landboard, kite buggy, snow kite and kite boat). British Kite Sports has a Code of Conduct which applied to all kite-powered activities, which is focused on safety and respecting others users at the activity location. The Code does encourage users to 'find out about and observe local rules and restrictions' and 'keep your lines away from people, animals and craft on land or water' both of which may help to minimise any impacts on wildlife.

The UK Windsurfing Association is a not for profit company whose objective is to promote the sport of windsurfing. The British Wavesailing Association (BWA) is the competition body for wave sailing.

Good practice messaging

No national level Code of Conduct to minimise the main pressure arising from kitesurfing and windsurfing (visual disturbance of marine mammals and birds on shore or at sea) was sourced. As this activity was anecdotally reported by several stakeholders to be an activity of concern in some areas, this is considered to be a gap and development of a code promoting good practice to minimise potential impacts may be desirable. Such a code could be developed by the NGB in collaboration with stakeholders with expert knowledge of the features most likely to be affected.

There are a number of local Codes of Conduct specifically aimed at kite- and windsurfers, which could potentially be drawn on in the development of such a code (for example, the Kitesurfing Code of Conduct for Poole Harbour² and the Thanet Coast Wind Powered Activities Coastal Code³). Key high level messages to minimise impacts within these resources include (some text summarised):

- Avoid putting shoreline wintering birds to flight by using designated access points.
- Surf within designated activity zones (for example as identified by information signs).
- Avoid getting close to bird feeding grounds (eg along the strandline or reef), or where they are resting at high tide.

² Produced by Poole Harbour Commissioners, available online at: <http://phc.co.uk/downloads/latest/PHC-Kite-Surfing-6pp-DL-Leaflet-1215.pdf>

³ Applicable to windsurfing, kite-surfing and sailing. Coastal code available on the Thanet Coast website at: <http://www.thanetcoast.org.uk/factfile/thanet-coastal-codes/>

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- Keep your distance from birds when walking across the beach to avoid bird disturbance.
- Whenever possible, avoid disturbing birds on the water. And
- If you encounter wildlife, such as seals either at sea or on sandbanks, slow down and give them a wide berth.

Further information

Further information about the National Governing Body for boardsports with sails, site specific conservation advice and management of marine recreational activities can be found through the following links:

- British Kite Sports: www.britishkitesports.org
- The UK Windsurfing Association: www.ukwindsurfing.com
- The British Wavesailing Association: www.britishwavesailingassociation.com
- conservation Advice - Advice on Operations:
- For site specific information, please refer to Natural England's conservation advice for each English MPA which can be found on the Designated Sites System <https://designatedsites.naturalengland.org.uk/> This includes Advice on Operations which identifies pressures associated with the most commonly occurring marine activities, and provides a broad scale assessment of the sensitivity of the designated features of the site to these pressures.
- For further species specific sensitivity information a database of disturbance distances for birds (Kent et al, 2016) is available here: <http://www.fwspubs.org/doi/abs/10.3996/082015-JFWM-078?code=ufws-site>
- some marine species are protected by EU and UK wildlife legislation from intentional or deliberate disturbance. For more information on the potential requirement for a wildlife licence: <https://www.gov.uk/guidance/understand-marine-wildlife-licences-and-report-an-incident>
- the Management Toolkit which can be accessed from [Marine evidence > Marine recreational activities](#).

Evidence notes for other marine recreational activities which can be accessed from [Marine evidence > Marine recreational activities](#) and include the following activities:

- boardsports without a sail (surfing)
- coasteering
- diving and snorkelling
- dones (recreational use at the coast)
- general beach leisure
- hovercraft
- motorised and non-motorised land vehicles (including: the use of quad bikes, scramble bikes and cars on the foreshore and the activities of sand yachting, kite buggying and landboarding)
- light aircraft (including small planes and helicopters, microlights, paramotors and hang gliding)
- motorised watercraft;

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- non-motorised watercraft (including dinghy, day boats or other small keelboat without a motor and the paddlesports sea kayaking, surf kayaking, sit-on-top kayaking, Canadian canoeing and stand up paddle boarding)
- personal watercraft
- wildlife watching (from land and from vessels)

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Table 1 Potential direct pressures arising from windsurfing and kitesurfing

	Abrasion/disturbance of the substrate surface	Abrasion/disturbance below substrate surface	Underwater noise changes	Above water noise changes	Visual disturbance
Access (to sea, on foot with equipment)	Negligible	X	X	Negligible	✓ ¹
Activity (windsurfing/kitesurfing in sea)	X	X	Negligible	Negligible	✓ ¹
X - No Impact Pathway					
1 - Pressure relates to the presence of the person and equipment whilst accessing the sea or during the activity					

Table 2 Biological receptors potentially affected by the pressures arising from windsurfing and kitesurfing

	Abrasion/disturbance of the substrate surface	Abrasion/disturbance below substrate surface	Underwater noise changes	Above water noise changes	Visual disturbance	
Intertidal Habitats	Negligible	Impact pathways scoped out	Impact pathways scoped out	Impact pathways scoped out	Impact pathways scoped out	
Subtidal Habitats	Negligible		Impact pathways scoped out	Negligible	✓ (basking sharks)	
Fish	Impact pathways scoped out					
Marine Mammals						✓
Birds						✓

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Table 3 Assessment of indicative likelihood of significant impacts from windsurfing and kite surfing activity

Pressure	Likely overlap between activity and feature (confidence)	Evidence of impact (confidence)	Sensitivity of feature to pressure (confidence)	Likelihood of observable/measurable effect on the feature	Likelihood of significant impact on Conservation Objectives
Visual disturbance – Fish (basking sharks)	Low-Medium depending on location and season (high) Likelihood of overlap highest in South West England in spring and summer when foraging and courtship behaviour occurring at sea surface	Direct evidence of impact on feature limited. However, based on expert opinion startle responses are expected to occur due to the very close approach of a windsurfing or kitesurfing craft to a basking shark. The effects are expected to be most severe for repeated disturbance events	Medium (during sensitive periods)	Medium – based on the potential of overlap between pressure and feature (in some locations) during periods of important feature behaviour	Low
Visual disturbance – Marine mammals (cetaceans and seals at sea)	Low-Medium depending geographical location of activity (high)	Direct evidence of impact on feature limited. Responses are expected to be similar to that of other non-powered craft with evasive behaviour expected. Occasional disturbance stimuli caused by windsurfing and kite surfing craft is unlikely to cause long-term disturbance. Furthermore, windsurfing or kitesurfing craft are unlikely to be used to deliberately watch or interact with cetaceans (expert judgement)	Medium–High	Low - Medium– based on high confidence in evidence base showing disturbance effects and sensitivity to pressure	Low
Visual disturbance – seals (hauled out only)	Low–High depending on geographical location of activity i.e. higher if the	Direct evidence of impact on feature limited. Windsurfing and kitesurfing	High - hauled out seals sensitive to visual disturbance (medium)	Medium– based on wide range of likely overlap between pressure and	Low-Medium

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Pressure	Likely overlap between activity and feature (confidence)	Evidence of impact (confidence)	Sensitivity of feature to pressure (confidence)	Likelihood of observable/measurable effect on the feature	Likelihood of significant impact on Conservation Objectives
	activity is undertaken in close proximity to established seal colonies (high)	would be expected to cause disturbance at similar or greater distances to other non-powered craft. However, windsurfing or kitesurfing craft are unlikely to be used to deliberately watch or interact with hauled out seals (expert judgement)	Evidence suggests common seals more sensitive to pressure than grey seals (high)	feature. Where overlap occurs, strong evidence base for impact and high feature sensitivity	
Visual disturbance – Birds	Low–High depending on geographical location of activity (high)	Disturbance responses for waterbirds observed at distances of 50-700 m depending on the species. Unpredictable and high speed movements of these craft expected to cause the greatest disturbance responses (high)	Low-High Sensitivity will differ between species. Some species e.g. red-throated diver, curlew, are highly sensitive to disturbance; other species e.g. gulls, have high thresholds (low sensitivity) to disturbance Certain behavioural activities are considered more susceptible to disturbance e.g. nesting seabirds or breeding birds (expert judgement) Limited evidence of sensitivity of diving seabirds to pressure	Medium–High based on wide range of potential for overlap between pressure and feature and the high sensitivity of some species/behaviours	Low-Medium