

8th SESSION OF THE MEETING OF THE PARTIES

26 – 30 September 2022, Budapest, Hungary

MANAGING WATERBIRD DISTURBANCE: A SHORT GUIDE FOR WETLAND MANAGERS [DRAFT]

Introduction

Through Resolution 5.24 the Meeting of the Parties (MOP) requested the Technical Committee, funding permitting, to produce simple but comprehensive guidance on the management of disturbance in a form that may be widely translated and disseminated to wetland site managers throughout the Agreement area.

This mandate from the MOP was included as task 4.2 in the Technical Committee (TC) work plan 2019-2021 and it envisaged to commission simple but comprehensive guidance on the management of disturbance in a form that may be widely translated and disseminated and submit to MOP8 for consideration and initially to be produced in English, French, Arabic and Russian versions. At its 15th meeting in April 2019 the TC agreed that the product should be highly visual and include less text, also as a means to reducing cost of translation. In advance of the 16th meeting of the TC a draft guidance was compiled pro bono by the TC. This draft guidance was approved for submission to MOP8 by the Technical and Standing Committees at their 16th meeting on the 25-29 January 2021 and 16th meeting on 4-6 May 2021, respectively.

Below are some considerations on the specifications and costs of production of this guidance:

Projected size: Likely B5. Could be other size but A4 is too large. Essentially needs to be ‘field guide’ shape.

Format: c. 400 words per spread + illustrations/figure/schematics (communicate key messages keeping words limited to ease translation). Total of 28 pages.

Target audience: The audience is “wetland site managers throughout the Agreement area”, so actions that are policy-related and/or can only be delivered at scales significantly wider than single sites are not therefore appropriate for this guidance. **It is fundamentally a practical guide for managers.**

Content: There is a degree of duplication of issues between the page spreads. This is deliberate to reinforce key messages. It is not anticipated that the guidance will be read sequentially as a narrative.

Artwork: To maximise its use across the Agreement area, it will be important that the backdrops used illustrate a range of landscape types and are not restricted to one geographic area such as Europe. Whilst Northern Europe is the source of most disturbance research, the issues covered here are just as relevant in Africa, Western Asia and the Middle East.

Costs of final production: Secretariat have previously advised on costs of production as reported in the MOP7 TC workplan. For English, French, Arabic and Russian versions this amounts to €76,000. €30,000 to draft plus translation at €2,000 each for three languages, plus production costs at €10,000 each for four languages. Drafting has been now largely completed pro bono by the TC but a guestimate for final artwork (not included above but single cost) is likely c. €15,000 bringing an approximate total for four language versions to €61,000. However, artwork, translation and production costs need to be properly estimated at 2021 prices.

Text in **yellow** or [in square brackets] is for editorial purposes and will be eventually removed or amended.

Action Requested from the Meeting of the Parties

The Meeting of the Parties is requested to review this draft guidance and adopt it for further use subject to editorial adjustment during the production of the publication.

Draft

Managing waterbird disturbance: a short guide for wetland managers [Draft]

[Note that an integral element of this guidance are the illustrations which have yet to be commissioned. The sample figures included here are illustrative of the concept, and if included in final production will likely be further developed. Content will be designed to fit on the specified number of pages.]

Contents

Introduction [1 page]	5
Ten key points: waterbird disturbance in a nutshell [1 page]	6
1. What is disturbance? Some background [2 pages]	7
Which waterbirds does this guidance address?.....	7
Not all disturbance has long-term consequences for waterbirds	7
Impacts of disturbance relate to both its intensity and frequency.....	8
Avoidance is better than cure.....	9
Wider contextual information can help in assessing significance of disturbance on a site	9
Remember to assess disturbance alongside other potential impacts.....	9
Disturbance impacts may be cumulative across sites	9
How to assess whether disturbance is serious?.....	9
2. How to start: things to consider and information to gather [2 pages]	10
Take a systematic approach to assess the situation and possible responses	10
3. Tools that help avoid or manage disturbance [4 pages]	12
Managing disturbance is largely about managing people - develop people skills!	12
Always involve those whose activities cause disturbance.....	12
Local management committees	12
Education and interpretation.....	13
Information boards and signs.....	13
Codes of conduct	13
Management planning.....	14
Important elements of management planning.....	15
4. Zoning human activities [2 pages]	16
5. Recreational disturbance [4 pages].....	19
Walkers and tourists.....	19
Dogs running free near seabird breeding colonies and roosts	19
Watersports	19
Participant limitation.....	20
Birdwatchers and hides.....	21
Hunting disturbance.....	22
6. Disturbance-free refuges [2 pages].....	25
Refuges are critical	25

7. Disturbance from infrastructure and other developments [2 pages]	26
Avoidance is better than cure.....	26
Environmental Impact Assessments	26
Renewable energy	26
8. Concentrations: colonially breeding waterbirds and wader roosts [2 pages]	27
9. Low-flying aircraft and drones [2 pages]	30
10. Where to find further information?.....	31
11. Acknowledgments	31
Annex. International obligations.....	32
AEWA [2 pages].....	32
The international obligations of AEWA governments	32
AEWA's formal definition of disturbance.....	33
The Precautionary Principle.....	33
Ramsar [1 page]	34
Wise use	34
Management planning.....	34
Other international legal frameworks also address disturbance	35

Introduction [1 page]

Migratory waterbirds share their fragile world with an increasing number of humans, who also make demands on, and otherwise impact, the same wetland habitats used by birds.

The bad news is that this can often result in negative consequences. Sometimes this is through the direct loss of habitat, but effective habitat loss also occurs indirectly through disturbance – which makes a wetland unavailable to birds as they cannot safely undertake activities such as feeding or roosting. Whilst some forms of disturbance are natural, for example by predators, if disturbance by people is serious and sustained, it can result in the permanent exclusion of potentially large numbers of waterbirds from that habitat.

The good news however is that there are many, well-tried means to avoid, reduce, or eliminate the negative consequences of disturbance on the behaviour and, importantly, impacts on the survival and productivity of waterbirds.



Waterbirds and boats co-existing in the Inner Niger Delta. Photo: Jan van der Kam [PERMISSION NEEDED]

What this guidance does and does not cover

This short booklet provides a brief summary of these techniques for wetland site managers. It is not a review of disturbance science – which is well covered elsewhere – but a guide to practical techniques and approaches that can be used to minimise disturbance and its effects.

Nor does this guidance address policy level responses, or wide scale interventions, that should and can be undertaken by government(s) – typically such solutions are not accessible to individual site managers.

The final section suggests further, more detailed, sources of information. The online version of this text (at <http://www.unep-aewa.org/xxx>) contains hyperlinks to these publications.

www.conservationevidence.com was searched on 31 January 2021 and synthesised evidence on legal habitat protection, creating wildlife refuges, using signs and access restrictions at next sites, provide paths to limit the extent of disturbance, use voluntary agreements with local people to reduce disturbance, start educational programmes for personal watercraft owners and habituate birds to human visitors. There is a need for further tests to refine many of the measures described here such as most effective means of encouraging changes in human behaviour. This document adopts the principles of evidence-based guidance (Downey *et al.* unpublished). In the text, links are given for interventions supported by evidence from experimental studies, however, most interventions have not been subject to formal research studies.

Ten key points: waterbird disturbance in a nutshell [1 page]

What is disturbance?

1. **Disturbance by human activities can be highly damaging to waterbirds.** It restricts their ability to use wetlands or other important areas for feeding, breeding or roosting and so is a form of habitat loss. A bird's response to disturbance often results in significant energy costs for them – which can have serious implications under some circumstances. However, it is usually possible to resolve conflicts with waterbirds using simple techniques.
2. **Species vary in their susceptibility to disturbance**, which can further vary at different times and in different places. The sensitivity of waterbirds to disturbance varies at different stages of the annual cycle *e.g.* nesting, moulting, on migration, or in periods of severe cold. On migration waterbirds may rely on a few sites of key importance for short periods of intensive 'refuelling', and disturbance at those sites could have particularly detrimental effects to populations.

Consequences of disturbance

3. **Wetlands can support rich assemblages of many waterbirds**, or smaller numbers of a few species that may nevertheless be rare and important. All are potentially sensitive to disturbance under certain circumstances. It is important to understand and address disturbance not only for large concentrations of birds but also for smaller numbers of rare or threatened species.
4. **Prevention is best!** It is always best to avoid disturbance *before* it occurs rather than responding later. Early intervention as new activities or developments are planned near to a wetland can avoid serious disturbance arising in the first place – to the benefit of all.
5. **Not all disturbance is necessarily a problem for waterbirds.** Short term displacement of birds may not have negative consequences. At the outset, it is important to understand the causes and consequences of disturbance both for the individuals concerned but also (possibly) more widely for the population.
6. **The impacts of disturbance can be cumulative across sites:** even if disturbance on one site is low, if the same low level of disturbance also occurs at multiple other migratory sites, the cumulative effect may be much more significant for long-term survival.

How to respond to disturbance

7. **It is important to recognise that ultimately, management of disturbance is fundamentally about managing people.**
8. **Developing and implementing a site management plan is a structured process** that is helpful in reconciling multiple, sometime conflicting, uses of a wetland. As part of the management planning process, be systematic in understanding the problem, and the response options possible. Spatial zoning of activities is an especially helpful approach.
9. **If data is limited, then adopt a precautionary approach**, which balances the risk of inaction against the impact on people. This means being prepared to take conservation action before definitive evidence is fully available – an important AEWA principle. The Precautionary Principle enshrines this in conceptual and legal terms that apply in some Range States.

Follow-up and monitoring

10. **Management planning is a continuing activity and should involve regular monitoring** to enable activities to be refined as necessary. It is impossible to get things right first time, so 'learning from doing' is important – progressively adapting management as a result of monitoring actions and responses. Wetlands differ and therefore management techniques may also differ. One type of management doesn't fit all circumstances.

1. What is disturbance? Some background [2 pages]

Which waterbirds does this guidance address?

AEWA addresses many types of migratory waterbirds including waders or shorebirds; ducks, geese and swans; herons and egrets; flamingos and pelicans; and many types of seabird. Different issues are of importance for different groups. For example, seabirds and colonially breeding birds such as flamingos and herons, are most affected by disturbance in the breeding season, whilst for waders, disturbance at high-tide roosts is important, and ducks and geese are sensitive to hunting disturbance.

This guidance is equally applicable to non-migratory waterbirds (» **Annex - Ramsar**).

What is the cost of disturbance?

In the non-breeding season, disturbance that results in waterbirds moving from a favoured area has an energy ‘cost’ – both from flying and the inability to feed. Sometimes that cost can be recouped – through feeding more intensively on later return, or through feeding at an alternative site. However, at alternative sites food may be of poorer quality or even completely lacking, and so is more quickly depleted during sustained periods of disturbance.

In the breeding season, disturbance can be more directly damaging, especially where it results in the disruption of breeding, particularly for colonial species where many pairs may be impacted, or if it increases the risk that a nest will be predated following the departure of adult birds.

During the moulting period when some waterbirds are flightless, they may be unable to move to alternative sites.

Disturbance can have impacts even if birds do not abandon a site. For example, if shorebirds getting ready for migration repeatedly take flight and resettle as a result of people or dogs walking too close to the roosting flock, this energy expenditure can still have serious consequences for their chance of successful migration and reproduction.

Not all disturbance has long-term consequences for waterbirds

Disturbance *effects* (*i.e.* changes in the local behaviour, distribution, and abundance of birds in response to human activity) are not the same as disturbance *impacts* (*i.e.* population level changes caused by decreased breeding success and/or increased mortality). Typically, population-scale impacts are rarely possible to assess, in contrast to the effects – such as birds flying away - that can be readily observed.

Graphic showing birds flying from disturbance to

a) alternative feeding area

b) alternative area without food; and

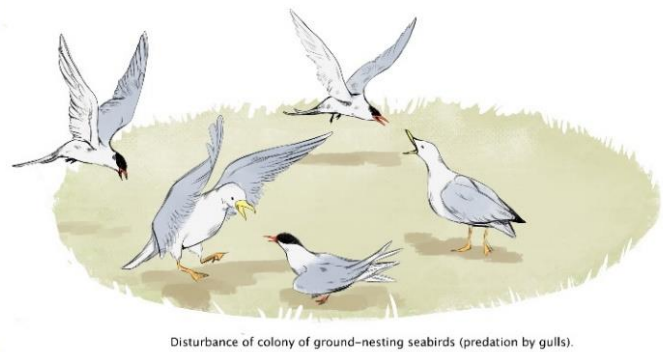
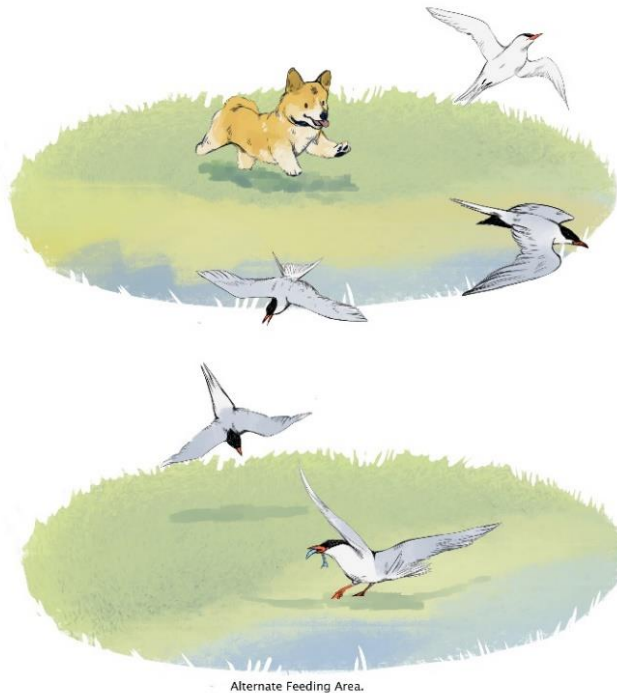
c) disturbance of colony of ground-nesting seabirds (predation by gulls)

What is disturbance?

What is the cost of disturbance?

In the non-breeding season disturbance that results in a waterbird moving from a favoured area has an energy 'cost' – both from the flying and the inability to feed. Sometimes that cost can be recouped – through feeding more intensively on its return later, or through feeding at an alternative site.

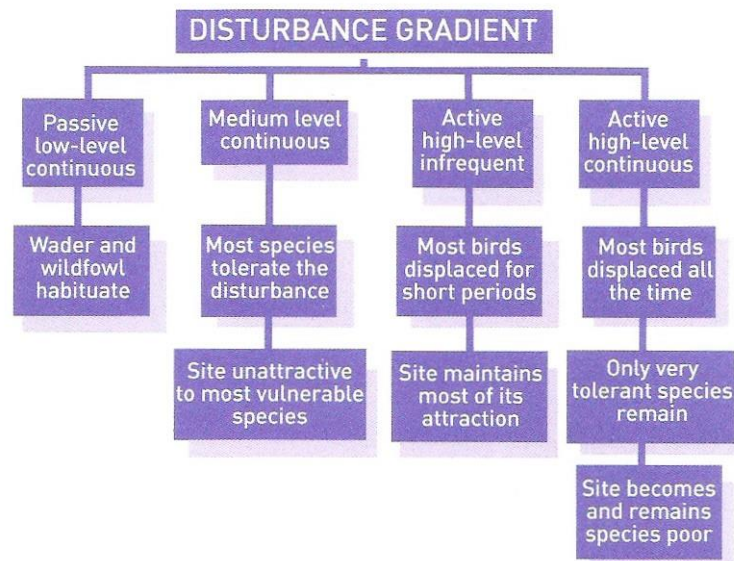
In the breeding season, disturbance can be more directly damaging, especially where it results in the disruption of a breeding colony, or increases the risk that a nest will be predated following the departure of adult birds.



Not all disturbance has long-term consequences for waterbirds

Disturbance effects (i.e. changes in the local behaviour, distribution and abundance of birds in response to human activity) are not the same as disturbance impacts (i.e. population level changes caused by decreased breeding success and/or increased mortality). Typically, the effects are rarely possible to assess in contrast to the impacts that can be seen.

Impacts of disturbance relate to both its intensity and frequency



Where the effect of a disturbing activity is low-level and occurs frequently, waterbirds can habituate to it. More intense and/or infrequent disturbances can have more serious and long-term consequences.

Avoidance is better than cure

It is always best to avoid disturbance *before* it occurs rather than to respond later. For example, it can be very difficult to encourage some very sensitive species to recolonise an area once lost from it due to disturbance.

Depending on the situation, early intervention as new activities or developments are planned near to a wetland can avoid serious disturbance arising – to the benefit of all *e.g.* avoid building airports where flights are likely to disturb important concentrations of waterbirds.

Other sections of this guide give examples on how to avoid disturbance.

Wider contextual information can help in assessing significance of disturbance on a site

Population or wide scale contextual information can be useful. Thus, if monitoring shows declines at a site in contrast to increases or stable numbers at other similar sites or nationally, this suggests issues at the site that need to be addressed. Some countries have formal schemes that provide such comparisons, for example [UK's waterbird Alerts process](#).

Remember to assess disturbance alongside other potential impacts

Multiple causes of disturbance can have synergistic or cumulative effects on waterbirds. For example, hunting disturbance may sensitise birds to other forms of disturbance (*e.g.* people without guns). It is important to consider *all* forms of actual or potential disturbance at a site, not just the most obvious.

Disturbance impacts may be cumulative across sites

The impacts of disturbance may be cumulative across sites: even if disturbance on one site is low, if the same low level of disturbance also occurs at multiple other migratory sites, the cumulative effect may be much more significant for long-term survival.

How to assess whether disturbance is serious?

AEWA requires its Parties to address “serious disturbance” (» [Annex - AEWa](#)). Disturbance should be judged as serious (or significant) if an action (alone or in combination with other effects) impacts on waterbirds in such a way as to be likely to cause impacts on populations of a species through either

- i. changed local distribution on a continuing basis; and/or
- ii. changed local abundance on a sustained basis; and/or
- iii. the reduction of ability of any significant group of birds to survive, breed, or rear their young.

2. How to start: things to consider and information to gather [2 pages]

Take a systematic approach to assess the situation and possible responses

Don't jump in!

First, to guide responses, gather baseline information to the extent possible, to detect existing disturbance. Then set up a programme to monitor sources of disturbance and their effects.

Systematically consider what is known about the causes and consequences of disturbance at a wetland (or other site), then consider the full range of possible options and use collated evidence (such as www.conservationevidence.com) and local knowledge and experience to decide what to do (AEWA's guidance on undertaking a systematic approach to waterbird conservation is [here](#) [FR [ici](#)]).

Bear in mind that the waterbird community for a site subject to significant disturbance may already be missing species or have reduced populations. Consider the situation at ecologically similar wetlands nearby without disturbance: can the waterbird community be restored?

Time spent initially bringing key information together will give long-term benefits.

Use this checklist:

1. List the species of interest present.
2. List species of most likely risk of disturbance effects and/or impacts.
 - 2.a Identify and list the potential causes of disturbance (and any temporal or spatial patterns in these): aim to understand the problem!
 - 2.b Identify time-of-year effects or impacts of each.
 - 2.c Identify likely significance of any effects according to given criteria.
3. Summarise the interaction of possible causes.
4. Be explicit about the degree of precaution.
5. List potential mitigation-management measures.
6. Reflect on which measures are most likely to work
7. Establish a disturbance monitoring programme.

1. What species are present?

List the species present on wetland throughout the year. Whilst some wetlands can support rich assemblages of many waterbirds, at other sites just a few species may be present that may nevertheless be rare, important, and sensitive to disturbance.

List those species that may be expected to be present, based on the situation at other nearby sites, but are locally 'missing'.

2. Are all species present being disturbed?

List those waterbirds present that are being actually or potential disturbed, and at what stage of their annual or life cycle this occurs.

Are they rare or have high conservation status nationally or internationally (e.g. under AEWA or IUCN)?

What numbers are involved? Are these locally, national, or internationally important?

3. What is the nature of the disturbance?

What causes the disturbance?

How do waterbirds respond? Is it serious? (» [Annex - AEWA](#))

Does disturbance occur just in some seasons or times of day?

Is disturbance frequent and/or intense?

4. What degree of precaution is appropriate?

AEWA urges a precautionary approach, but more or less precaution may be appropriate depending on the conservation status of species present (» Section [Annex - AEWA](#)). The benefits of precautionary actions should be weighed against their economic, social, cultural and recreational impacts on site users.

5. What are the possible response options?

Consider what sort of response options are possible (for example looking at the list of actions on www.conservationevidence.com (» Section [3](#)).

Is the site legally protected?

Is it possible to avoid disturbance using passive measures such as constructing screens or barriers (» Section [5](#))?

6. Which measures are most likely to work?

Collate information (*e.g.* from www.conservationevidence.com), local knowledge and experience, and stakeholder interests to understand what responses are likely to be cost-effective and acceptable.

Are there interested local community organisations or groups representing other wetland users that can be enlisted to help implement possible options?

Are voluntary measures agreed with users likely to be possible? (» Section [3](#))

Consider whether experimental measures, within a monitoring framework, could provide useful information to guide long-term management.

7. Establish a disturbance monitoring programme

Monitoring is essential and should be integrated into management planning to understand whether management measures are being effective or need to be adjusted.

3. Tools that help avoid or manage disturbance [4 pages]

Managing disturbance is largely about managing people - develop people skills!

Effective responses to disturbance depend critically on management of people.

Responses will vary according to local situations. For example, there are major differences between trying to manage 'organised' groups/clubs/events (for example the activities of a boat club resident on a lake), in contrast to individuals (even if that individual is behaving) who may not even visit the site regularly. The first situation will require the development of a long-term relationship, whilst for individuals approaches include fencing, signage and adjusting footpaths to avoid sensitive areas.

There are also differences between managing people who are 'willing to be managed' (socially compliant) and those who are not – and indeed who may even be antagonistic to the aims of the protected area. For the latter, longer term strategies to change their attitudes and behaviour will be necessary. Ultimately however, there may be a need, as necessary and appropriate, to involve enforcement authorities. But such approaches should be a 'last resort'.

These 'people issues' are relevant to all forms of disturbance, but some much more than others.

Always involve those whose activities cause disturbance

Achieving long term and successful solutions to managing disturbance is more likely if they involve those whose activities cause disturbance, particularly local communities.

- Involve local communities and other wetland users from the outset to help define priority concerns and to develop a shared vision for the wetland.
- Identify and work with local individuals who have shown themselves as community leaders and opinion formers. Involve them in the management planning process.
- Seek knowledge about the wetland and its species from local communities and incorporate it in developing responses. Combining traditional or historical knowledge with scientific knowledge.
- Local interests can have positive or negative implications for site management. Likewise, proposed management interventions may have a considerable impact on the lives or livelihoods of local communities and other wetland users. Understand these to reduce future conflict.

Local management committees

Depending on the status of a site, a local management committee may be a useful means of involving local communities in site management planning.

A participatory approach to identifying wetland values will build commitment towards managing those values in the long term. Ramsar's [participatory skills handbook](#) gives much valuable 'how to do it' guidance [FR [ici](#), ES [aquí](#)].

Where resources are limited, engaging with volunteers from the local community to undertake site patrols can build engagement.



Engagement with local communities and other wetland user groups is crucial

For the long-term success of measures restricting disturbance, it is critical to engage with those communities using a wetland and/or dependent on its resources. Communication and awareness-raising techniques are thus very important.

Education and interpretation

Education and interpretation are important, and the media and messages used should be carefully planned. Potential topics include:

- the value of waterbirds and wetlands;
- environmental impacts and effects of recreation and possible solutions;
- proficiency tests for shooting, including bird identification (» Section 5);
- how hunting can be sustainable (» [AEWA's Sustainable Hunting Guidelines](#));
- implementation and development of codes of conduct (below); and
- habitat management needs and opportunities.

Information boards and signs

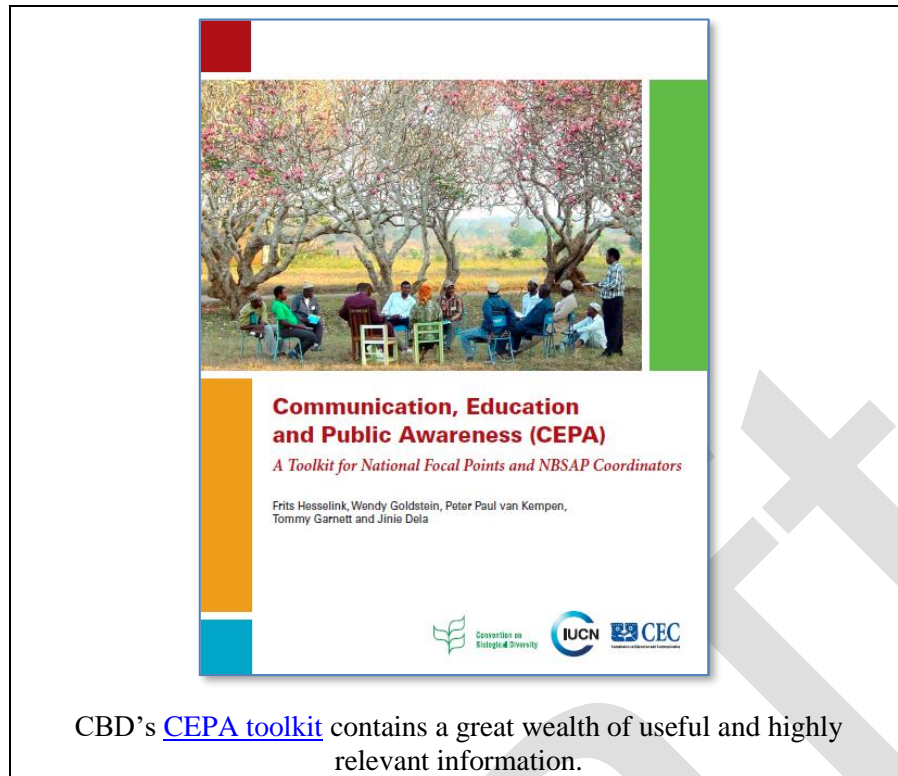
Visual signs that explain and show areas where access may be restricted [have been shown](#) to be effective.

Codes of conduct

Simple codes of conduct can reinforce good behaviour that does not disturb waterbirds. These may be useful with some wetland users, for example those engaged in potentially disturbing watersports.

Codes of conduct should be reviewed at least every five years and updated as required.

Adequate implementation of codes of conduct should be encouraged (*e.g.* through education and interpretation, and patrolling) especially by relevant governing bodies.



Good interpretive material should place a site in a wider context.

Management planning

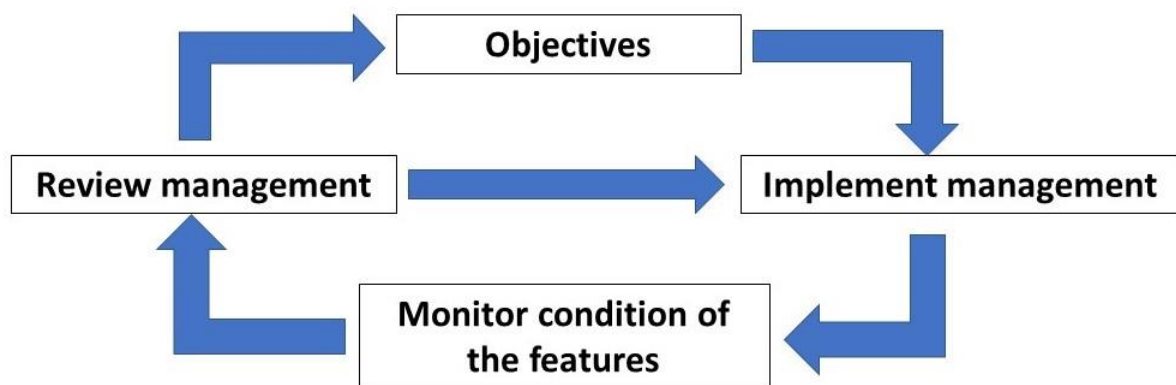
The central approach to addressing disturbance is through site management planning. This is a structured approach that establishes management objectives for a wetland and outlines approaches

There is considerable information available on how to undertake management planning, including:

- [Ramsar's Handbook on management planning](#) [FR [ici](#)].
- [A field guide for management planning](#).
- IUCN's [Guidelines for Protected Area Legislation](#).
- Many other resources are available at the [Ramsar Sites Management Toolkit](#) (FR [ici](#)).

Important elements of management planning

- Understand the site: habitats present and how they are used by waterbirds: surveys and monitoring can help identify priority areas for zoning, habitat management/enhancement, and other responses.
- It is a continuous process not a 'one off' since management needs will likely change as conditions change.
- Monitoring is essential to allow management to be adjusted in response to conditions.



- Zoning within a protected or sensitive area (*e.g.* strictly protected areas, tourism areas, restoration areas *etc.*) is an important mechanism to manage multiple users and purposes within a single site (» Section 4).
- It is essential to involve local communities and other wetland users with interests at all stages as an essential element of gaining consensus and public acceptance.
- The Precautionary Principle should be applied where there is uncertainty and potentially serious risks to waterbirds from disturbance or other impacts (» Annex - AEWA).
- A participatory approach to identifying wetland values will build commitment towards managing those values in the long term. Ramsar's [participatory skills handbook](#) gives much valuable guidance [FR [ici](#), ES [aquí](#)].

4. Zoning human activities [2 pages]

Zoning within a protected area (*e.g.* strictly protected areas, tourism areas, restoration areas *etc.*) is an important management tool to accommodate the needs of multiple users and purposes within a single site.

Creation of management zone(s) in large wetlands is a particularly useful way to allow authorities to recognise and manage an area for its multiple values and purposes. It creates flexible options for site managers through graduated regulation.

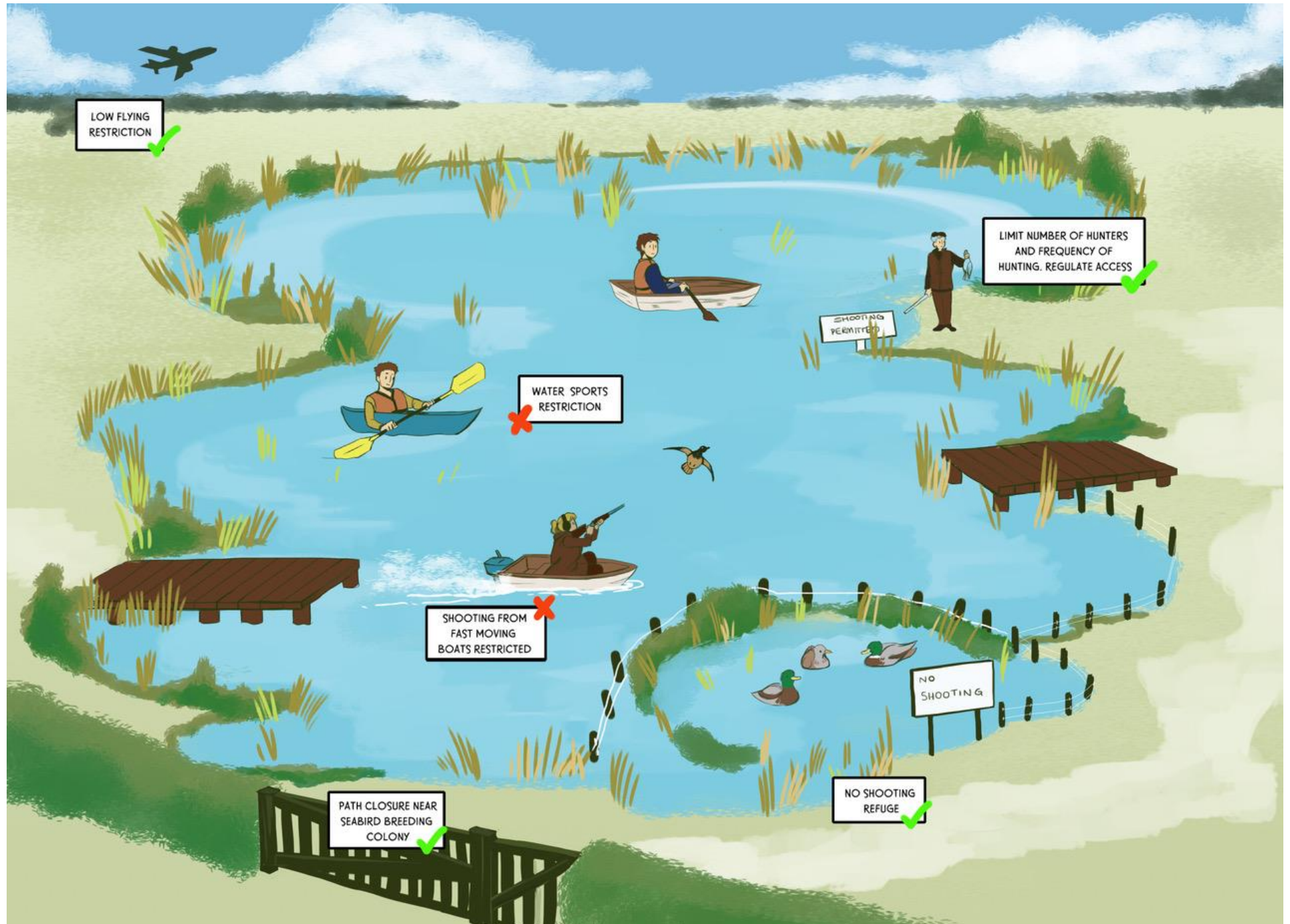
Consider temporal as well as spatial zoning: some activities may be more disturbing at particular times of the day, or in some seasons more than others.

Spatial zones set aside for waterbirds should contain habitat that provides adequately for their needs, especially with regard to feeding, nesting and rearing young, roosting and moulting. [Studies have shown](#) reduced disturbance from establishing refuge zones without hunting, and from voluntary waterfowl [avoidance areas for boat activities](#).

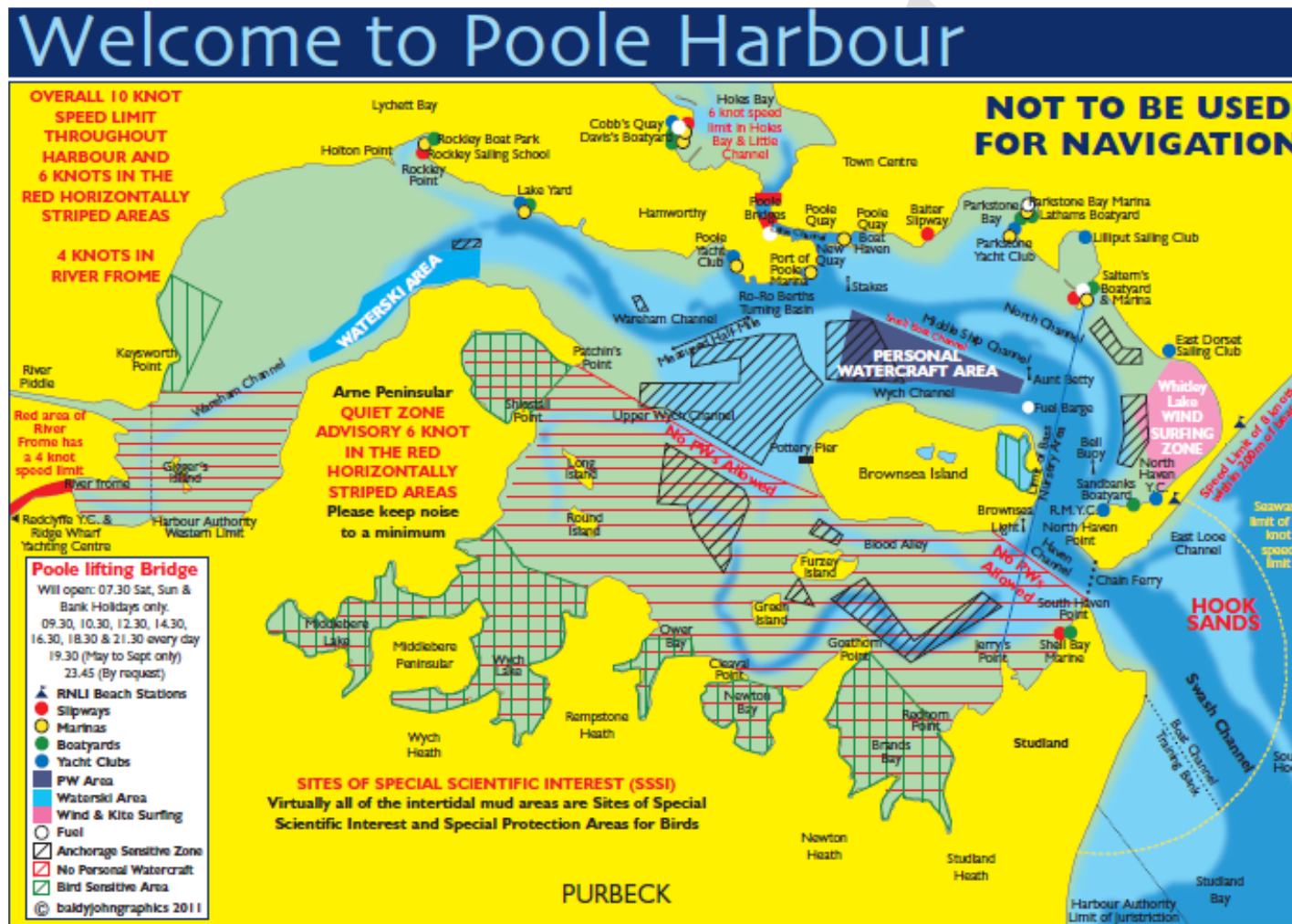
Spatial and temporal zoning

Large graphic (or two? – to be determined) showing multi-use wetland and various spatial and temporal restrictions possible including: [The list here and elsewhere is not in priority sequence.]

Picture element	Text to be included
Shooting from fast moving boats restricted	Refuges should also restrict shooting from the water as well as the land
Watersport restriction (moorings, skiing, jet skis...)	Restrict watersports to avoid important areas for waterbirds
Dune buggies and 4x4s	Restrict access to off-road vehicles
Low-flying restriction	Restrict low-flying or drone use over important waterbirds feeding and/or roosting areas
Bait-digging at low tide	Ensure bait-digging is sustainable
Path closure near seabird breeding colony	Close paths during the breeding season where access might disturb seabirds or other nesting waterbirds such as ground-nesting waders
Tourists	Provide facilities and easy access for tourists to visit less sensitive parts of the site
Traditional users	Work with local communities to understand their needs and how activities might be modified to reduce disturbance as appropriate
No shooting refuge	Where hunting occurs, establish no-shooting refuge areas to sustain waterbirds. Always include good quality feeding areas and preferred roosts sites not just less preferred areas



Include a simplified and generalised version of this showing zoning



5. Recreational disturbance [4 pages]

Walkers and tourists

Tourists and walkers can inadvertently cause significant disturbance for ground nesting birds. Create path networks that avoid important areas and/or temporarily close paths during the breeding season. Placing interpretive signs to explain why paths are shut is likely to increase compliance. Various [studies have shown](#) that signs and fencing around colonies regularly resulted in higher breeding success.

Boat-based tourism can cause disturbance and liaison with tour operators is important to avoid this.

Dogs running free near seabird breeding colonies and roosts

Wader roosts are especially vulnerable to disturbance, as are colonies of ground-nesting seabirds such as terns (» Section 8), and breeding birds nesting on beaches or in other areas regularly used by dog-walkers.

Dogs can cause considerable disturbance to waterbirds if allowed to run freely near concentrations of birds. As well as educating their owners, other options include dog proof fencing or fencing larger areas such that dogs are prevented from reaching the roost or colony. The later may be the only option in areas with large populations of stray dogs roaming uncontrolled. Neutering programmes will help reduce feral dog populations in the long-term.

Signs at access points should emphasise the highly damaging impacts of free-ranging dogs. Site wardens have an important role in explaining to dog-walkers and local people the need to prevent roaming in sensitive areas.



Watersports

Water-based sports are very popular in some areas. On inland waters this can include dinghies, motorboats, water-skiing, jet skis, paddleboards, canoes/kayaks; whilst in coastal waters, yachts, kitesurfing and paddleboards can additionally be disturbing.

Zoning (» Section 4) is a valuable means to restrict areas available for water sports. Where such sports are locally organised through clubs, maintain close liaison to explain problems and needs: [education can reduce boat disturbance](#).

On inland waters, use of boats with thin, narrow bows and electrically powered engines should be encouraged through use of formal (if possible) or advisory speed-limits, to reduce wake and noise respectively

‘No wake zones’ by limiting boat speed helps prevent physical disturbance of roosts, for example washing birds off sandbars.

Participant limitation

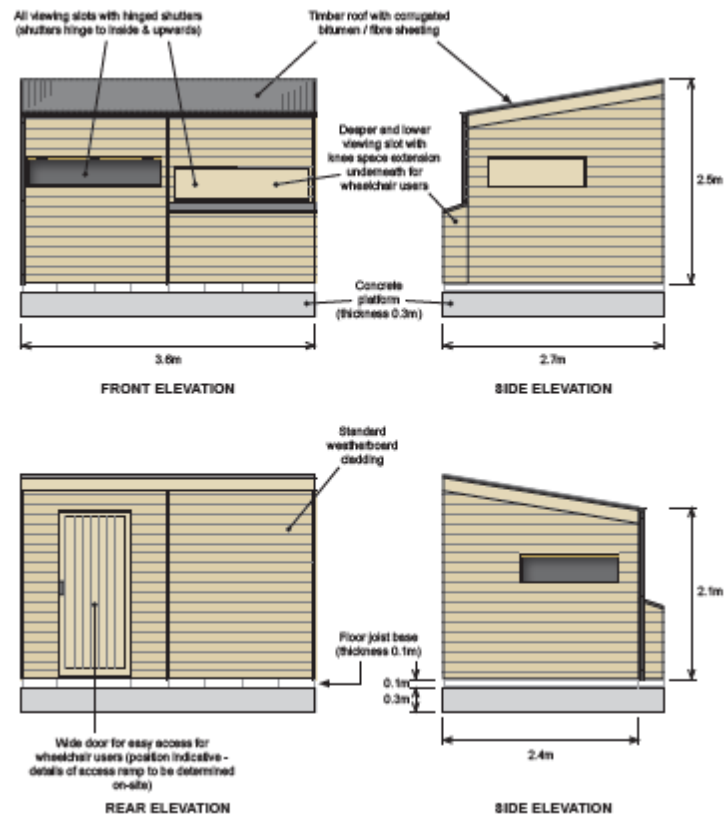
Once all other management techniques have been exhausted, techniques should be used to limit the number of participants pursuing an activity to a level not exceeding the ecological carrying capacity.

Time tickets are a means to limit numbers of participants at any one time.

Large graphic showing paths, birdwatching hide, screens, and concealed access routes with explanatory text on best practice principles of placement

Picture element	Text to be included
Summer games near a wader roost	Recreational activities during the breeding season should be discouraged as possible
Free-running dogs close to waterbird roost/seabird colony	Prohibit freely running dogs near concentrations of ground-nesting birds and/or roost sites Always place interpretative signs to explain the importance of keeping dogs under control Have lots of simple ‘Keep dogs on lead’ signs Work with local communities to explain how dogs can be disturbing and the need to constrain them in certain areas or certain times Identify and promote less sensitive areas where dogs may exercise Consider fencing in particularly sensitive areas
Screens	Screens with slots for viewing are a low-cost alternative to hides Access to and from hides should ideally be screened to prevent disturbance and limit opportunities for “creep”
Hedges	Hedges can conceal paths, but consider species selection to ensure they hide people in all seasons
Creation of path networks away from waterbird areas	Create and maintain path networks that avoid important areas
Path closure near concentrations and colonies of ground-nesting birds	Close paths during the breeding season where access might disturb seabirds or other ground-nesting waterbirds
Jet skiers close to waterbirds	Create zones to limit boat and other water-sport access to important areas for waterbirds
Motorboat	Motorboat speeds on rivers and canals should not exceed 8 km/hour

Birdwatchers and hides



Redraw and simplify a plan of a bird hide

Viewing hides are a good way of allowing people to watch waterbirds without disturbing them. Many birds will feed within a few metres of a well-designed hide if the occupants are not too noisy. Well-built hides are not cheap and should be constructed to reduce disturbance whilst providing good views overlooking where waterbirds regularly feed and congregate.

When a new wetland is being constructed, shorelines and island should be planned to allow interesting areas to be viewed from proposed hides with concealed access routes.



Access to hides should be concealed behind banks, hedges or screens to allow entry and exit without waterbirds seeing people. Ensure they are of sufficient height to completely conceal moving people.



Sometimes screens can be temporary. These straw-built screens were constructed for a short period to allow public to view waterbirds in arable landscapes during a birdwatching festival in South Korea.

Hunting disturbance

Hunting waterbirds with guns has the potential to be highly disturbing. However, [research has shown](#) that measures can limit this disturbance and its impact. There are many national and international codes of good practice for shooting which include such principles, such as the Council of Europe's Charter for Hunting 2007; the [European Charter on Hunting and Biodiversity](#); and the [UK Countryside Alliance](#).

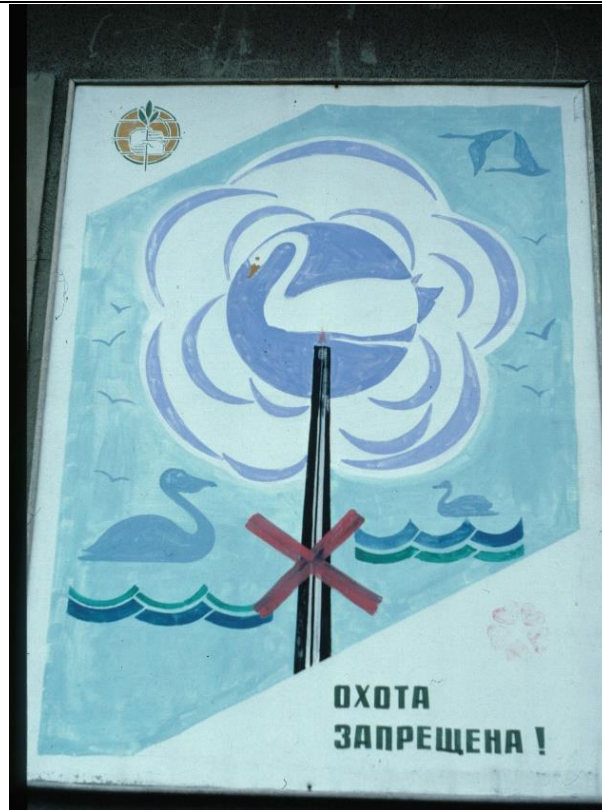
The first step is to assess hunting activity and agree where (and how) it is disturbing (according to relevant criteria). Managing hunting on a wetland could include the following responses dependent on assessment of the issues:

- create refuges or no-shooting zones (» Sections 4 and 6);
- limit the number of people hunting at any one time;
- control numbers through issuing limited numbers of licences or permits to shoot;
- restrict the times of day when shooting may occur;
- restrict the frequency of consecutive days when shooting may occur (*i.e.* ensuring that 'no shooting' days occur each week);
- review access provisions including entry points and access to shooting locations by vehicle and boats;
- ensure that permission to shoot on a site requires the use of non-toxic shot in line with AEWA guidance [here](#);
- ensure suspension of hunting in periods of severe cold weather following AEWA's guidance [here](#);
- ensure that local hunting regulations for the site are well-known, including knowledge of any protected species that may be present; and
- publicise and enforce legal close seasons when no shooting occurs.

Not all of these will necessarily be possible or necessary at every site.

Large graphic showing large wetland with different types of hunting techniques:

Picture element	Text to be included
Shotgun hunting from land over decoys	{ none }
Shotgun hunting from moored boat	{ none }
Refuge creation	Where hunting occurs, establish no-shooting refuge areas to sustain waterbirds. Always include good quality feeding areas and preferred roosts sites not just less preferred areas
Limit numbers hunting at any one time	A permit system regulating hunting access should limit maximum numbers shooting at any one time
Limit hunting to certain times of the day	Restriction of hunting to certain periods (<i>e.g.</i> specified hours before and after dawn) creates disturbance-free periods of the day for waterbirds
Lead-free shot	Ensure that legal conditions related to hunting access specifies that only non-toxic shot is used
Cold weather shooting suspensions	In advance, work locally to agree with the hunting community the severe cold weather conditions during which shooting will be temporarily suspended. These are periods of extreme energetic stress for waterbirds and even low levels of disturbance can have severe consequences.
Publicise local hunting regulations for the site	Ensure hunting regulations are well known and, as appropriate, placed at major access points. Liaise with local hunters to enhance knowledge of protected species that may be present and at risk of confusion with legal quarry species
Publicise closed seasons	Explicitly publicise the periods of the year when it is illegal to hunt waterbirds



Ensure local hunting regulations for the site are well-known, including knowledge of any protected species that may occur.

6. Disturbance-free refuges [2 pages]

Refuges are critical

Refuges are areas within a wetland where all disturbing activities are forbidden or restricted, on either a temporary or permanent basis. They are a type of zoning (» Sections 4) and provide safe places for waterbirds to retreat to when disturbance occurs. They should comprise good quality habitat already used by waterbirds.

[Refuges benefit hunters](#) by sustaining large numbers of waterbirds on a site, especially in migration periods. This may create mutual benefits by improving the quality of the site for birds and also allowing for larger bags for hunters.

Picture element	Text to be included
Water-based activities	Refuges should also restrict water-based activities as well as those occurring on land
Low-flying restriction	Restrict low-flying or drone use over refuges
Public access	Where possible, restrict public access to refuge areas
Design of refuge	Design refuges to minimise the ‘edge’ and maximise the ‘interior’ – thus circular areas are better than linear areas. This reduces disturbance from activities beyond the refuge.
Use landforms to reduce disturbance (bund and island creation)	Where the construction of an adequately large disturbance-free zone is impractical, use constructed landforms such as peninsulas, islands and earth bunds to screen noise and visual stimuli.
Sensitive siting of visitor facilities	Visitor facilities such as car parks, toilets, paths and information boards should be carefully sited to retain or create disturbance-free zones.
No hunting refuges	Where hunting occurs, establish no-shooting refuge areas to sustain waterbirds. Always include good quality feeding areas and preferred roosts sites not just less preferred areas

7. Disturbance from infrastructure and other developments [2 pages]

Avoidance is better than cure

Much disturbance is unnecessary – for example footpaths placed too close to important waterbird roost sites cause regular disturbance to waterbirds every time they are used.

Wetland managers should be alert to potential developments adjacent to their site that may result in significant disturbance and intervene to avoid this occurring *e.g.* development of new airports or airfields, or projects promoting tourism. Early intervention at the planning stage can avoid later need to address problems.

Environmental Impact Assessments

For any new development next to a protected wetland, Environmental Impact Assessments undertaken to international standards, should assess the potential for waterbird disturbance, and development plans revised to ensure this does not occur before permission for the development is given.

There is considerable relevant information, especially for northern European wetlands, in *Wetlands Industry and Wildlife – a manual of principles and practices*.

Consider implications of development not only at the site, but on other sites nationally and internationally that share the same birds, and as necessary and possible promote a Strategic Environment Assessment with government agencies.

Renewable energy

Although of importance in producing carbon-free energy, renewable energy infrastructure – such as wind turbines – have the potential to cause waterbird mortality. There are a range of options, of varying effectiveness, for reducing the collisions risk of birds with electricity cables including locating outside flight routes or placing underground.

Large graphic showing wind turbines close to waterbird roost with explanatory text on best practice principles of placement:

Picture element	Text to be included
Avoidance of flight lines to/from roosts or feeding areas	Avoid constructing large infrastructure between waterbird roosts and feeding areas, or otherwise on regular flightlines to reduce risk of collision
Marking and placement of electricity cables to avoid wire-strikes	Conspicuously mark electricity cables crossing wetlands to avoid wire-strikes

8. Concentrations: colonially breeding waterbirds and wader roosts [2 pages]

Waterbird breeding colonies hold large densities of birds in small areas. Very large numbers of birds are thus potentially at risk from the effects of disturbance. Such situations include cliff nesting seabirds such as auks and gulls; ground-nesting species such as flamingos, pelicans, terns, noddies, gannets and other seabirds, some seaducks; and tree-nesting waterbirds such as herons, tree ducks, ibises and egrets.

Because of its potentially significant damaging impacts, AEWA requires governments to pay special attention to addressing disturbance in waterbird breeding colonies, including the “establishment of disturbance-free zones in protected areas where public access is not permitted.” (» [Annex - AEWA](#))

In coastal wetlands, waders are particularly susceptible to disturbance at high tide because their habitat space is in shortest supply when intertidal flats are covered by the sea and they gather flock together at high densities to roost – an important period of sleep, rest and digestion.

Such concentrations should be given priority attention when developing disturbance monitoring programmes and management planning (» Section [3](#)).

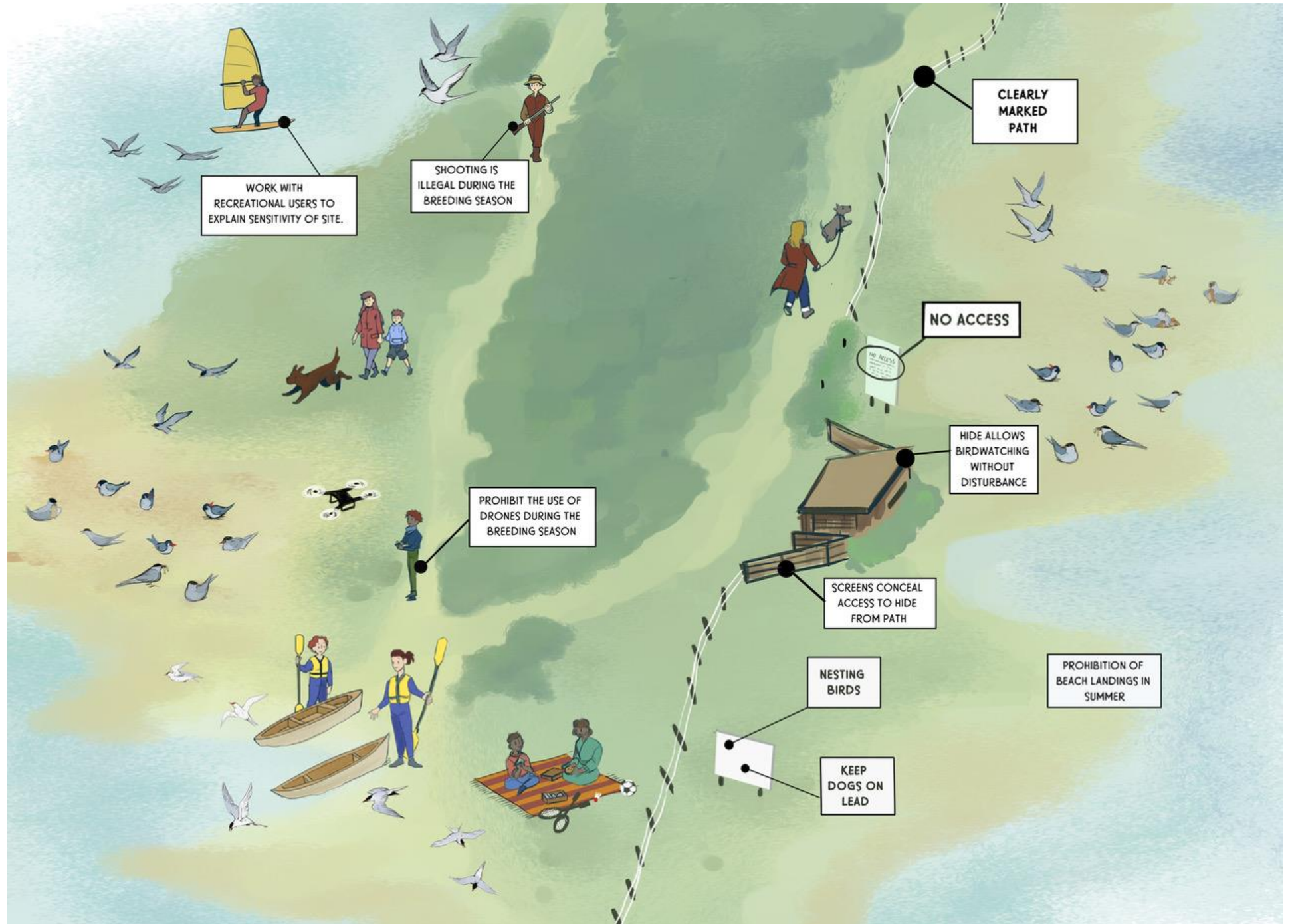
Large graphic showing ground-nesting seabird colony with explanatory text on best practice means of avoiding disturbance, including:

Picture element	Text to be included
Awareness raising signs Photo Sign	Good signage near the colony should explain why the site is important and the need to avoid it in the breeding season Signage should be complemented by active education and awareness raising in local communities
Markers showing access limitation Example Example	A rope between posts can reinforce ‘no access’ restrictions in the breeding season Permanent fencing is useful for people management
Clear paths Example	Create clearly marked footpaths to manage visitors and their expectations
Viewing platform Example	If appropriate create viewing platforms to allow good viewing of breeding seabirds at a reasonable distance, and without the risk of trampling
Prohibition of sailing and motorboat traffic close to shore/cliffs	Place signs in local harbours, boat clubs or other sources of boats to reinforce no landing in the breeding season
Prohibition on free-ranging dogs (dog on lead) Example Example	Prohibit freely running dogs near concentrations of ground-nesting birds and/or roost sites Always place interpretative signs to explain the importance of keeping dogs under control Have lots of simple ‘Keep dogs on lead’ signs Work with local communities to explain how dogs can be disturbing and the need to constrain them in certain areas or certain times Identify and promote less sensitive areas where dogs may exercise

Picture element	Text to be included
	Consider fencing in particularly sensitive areas
No landing on breeding seabird islands Example	If possible, prohibit landing on dense island colonies during the breeding season or otherwise liaise with local boat owners to discourage landings
Prohibition of low-flying aircraft and drones Example Example Example	Prohibit use of drones over and near the site during the breeding season As necessary, liaise with local airfields to avoid low flying in the breeding season

Graphic showing high-tide wader roost with explanatory text on best practice means of avoiding disturbance, including:

Picture element	Text to be included
Awareness raising signs Photo Sign	Good signage near the colony should explain why the site is important and the need to avoid it in the breeding season Signage should be complemented by active education and awareness raising in local communities
Markers showing access limitation Example Example	A rope between posts can reinforce 'no access' restrictions in the breeding season Permanent fencing is useful for people management
Clear paths Example	Create clearly marked footpaths to manage visitors and their expectations
Prohibition on free-ranging dogs (dog on lead) Example Example	Prohibit freely running dogs near concentrations of ground-nesting birds and/or roost sites Always place interpretative signs to explain the importance of keeping dogs under control Have lots of simple 'Keep dogs on lead' signs Work with local communities to explain how dogs can be disturbing and the need to constrain them in certain areas or certain times Identify and promote less sensitive areas where dogs may exercise Consider fencing in particularly sensitive areas



9. Low-flying aircraft and drones [2 pages]

Low flying aircraft or helicopters, drones and model aircraft have the potential to seriously disturb waterbirds – indeed model aircraft have been very successfully used to scare geese away from farmland.

Given the height at which they fly, the disturbance ‘footprint’ of aerial vehicles can extend over a considerable area.

Graphic with explanatory text on best practice means of avoiding disturbance:

Picture element	Text to be included
Prohibition of low-flying aircraft and drones Example Example Example	Prohibit use of drones over and near the site during the breeding season As necessary, liaise with local airfields to avoid low flying in the breeding season
Low-flying bans in extreme cold weather situations	Make advance arrangements to restrict low flying especially during periods of extreme cold weather when waterbirds are stressed
Airports	Ensure new airports are not constructed near concentrations of waterbirds. As well as disturbance implications, from a safety perspective, planes and birds are an unsafe combination Major developments near wetlands should be subject to EIAs undertaken to international standards
Hot-air balloons	Work with operators to avoid flights over nesting colonies

10. Where to find further information?

1. Ramsar's many [Handbooks on wise use](#) [FR [ici](#), ES [aquí](#)] provide a wealth of guidance on relevant issues including:
 - [Wise use of wetlands](#) [FR [ici](#), ES [aquí](#)].
 - [Wetland communication, education and public awareness](#) [FR [ici](#), ES [aquí](#)].
 - [Managing wetlands](#) [FR [ici](#), ES [aquí](#)].
 - [Participatory skills: establishing and strengthening local communities' and indigenous people's participation in the management of wetlands](#) [FR [ici](#), ES [aquí](#)].
2. AEWA formal guidance on definitions of disturbance of waterbirds is [here](#) [FR [ici](#)].
3. WWF, Wetlands International, IUCN & Ramsar Convention have published a user-friendly guide to [Wetland management planning for site managers](#).
4. Both WWT's [Wetlands, industry & wildlife – a manual of principles and practices¹](#), and the [Waterbirds & wetlands recreation handbook – a review of issues and management practice](#) are highly relevant especially to northern European contexts but also more widely.
5. [Guidance and best practices for evaluating and managing human disturbances to migrating shorebirds in coastal USA](#) and guidance for beach nesting waders is [here](#).
6. Seek relevant information from [ConservationEvidence.com](#)
7. [Waterbird disturbance mitigation kit](#)
8. [\[Australian guide to high tide shorebird roost management\]](#)

Resources available only in French:

9. [Manuel de gestion des aires protégées d'Afrique francophone](#).
10. Guidance on managing disturbance at breeding colonies <http://www.life-envoll.eu/> (especially <http://www.life-envoll.eu/fr-le-derangement?lang=fr>)

11. Acknowledgments

This guide was produced under the auspice of AEWA's Technical Committee. The Committee is very grateful to the following for their additional inputs and comments on multiple drafts: Nick Davidson, Micha Jackson, Vicky Jones, Niels Kanstrup, Jesper Madsen, Chris Spray, David Stroud, Bill Sutherland, John Swift and Kim Wallis. Artwork was created by Catriona Laird.

Photos: David Stroud pp. [x, x, x](#); Taej Mundkur pp. [X](#); [\[Jan van der Kam pp. X – permission to be sought\]](#)

¹ [Remove if not available online by time of MOP](#)

Annex. International obligations

AEWA [2 pages]

The Contracting Parties to the African-Eurasian Waterbirds Agreement (AEWA) have legal obligations to sustain the populations of these birds. One of the important issues addressed in the [Action Plan](#) to the Agreement is disturbance. Relevant obligations are summarised below.

The international obligations of AEWA governments

AEWA's Action Plan requires its Parties (signatory governments) to address various types of disturbance.

1. For waterbird populations of high conservation status (listed in Column A of Table 1 of the Action Plan), Parties need to:

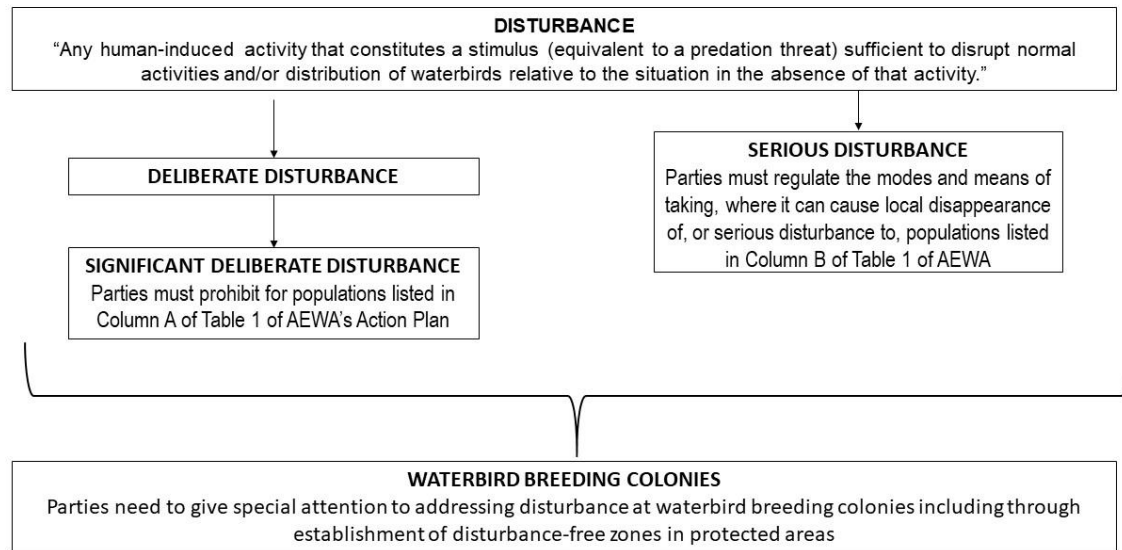
“...**prohibit deliberate disturbance** in so far as such disturbance would be significant for the conservation of the population concerned”.
2. For populations listed in Column B of Table 1 of the Action Plan, Parties need to:

“...regulate the modes of taking, and in particular prohibit the use of all indiscriminate means of taking and the use of all means capable of causing mass destructions, as well as local disappearance of, or **serious disturbance** to, populations of a species, ...”
3. Parties need to address disturbance especially at waterbird breeding colonies where even small impacts affect very large numbers of birds. The methods in this booklet will be useful:

“In cases where **human disturbance** threatens the conservation status of waterbird populations listed in Table 1, Parties should endeavour to take measures to limit the level of threat. Special attention should be given to the problem of **human disturbance** at breeding colonies of colonially-nesting waterbirds, especially when they are situated in the areas which are popular for outdoor recreation. Appropriate measures might include, inter alia, the **establishment of disturbance-free zones** in protected areas where public access is not permitted.”
4. Parties are also encouraged to undertake research on the causes and consequences of disturbance on waterbirds, and to undertake monitoring.
5. **These obligations can be addressed through management planning at wetlands important to waterbirds** (» Section **3**).

AEWA's formal definition of disturbance

In the context of its legal implementation by governments, AEWA has formally defined disturbance.



Note:

1. The wording ‘human-induced’ is intended to cover those situations where either direct or indirect consequences of human activity may cause damaging or serious disturbance. Examples might be the failure to keep dogs under control near colonies of breeding terns (» Sections 5 and 8), or overflights of flamingo colonies by hot-air balloons causing nesting failure (» Section 9).
2. AEWA has agreed that “Serious disturbance should be interpreted as meaning disturbance which is defined as being significant (as defined) in its outcome.”
3. Further information about the obligations of the governments of AEWA Parties to address disturbance of waterbirds, and more detailed definitions, can be found [here](#) [FR [ici](#)].

The Precautionary Principle

It is very often difficult to assess the impacts of disturbance. One of AEWA’s ‘Fundamental Principles’ emphasises the need to take a precautionary approach and apply the Precautionary Principle – always err on the side of caution. The Precautionary Principle is enshrined in legal terms in some countries and the EU.

In considering response options however, the degree of precautionary conservation action that may be appropriate will vary according to the flyway population significance of the local/site population present, as well as the degree of impact on site users.

Ramsar [1 page]

The Ramsar Convention's objective to conserve wetlands contributes to AEWA's mission in relation to the waterbirds using those habitats. Nearly all Contracting Parties to AEWA are also Parties to Ramsar.

Wise use

One of the important obligations of a Contracting Party to the Ramsar Convention on wetlands is to ensure the 'wise use' of listed wetlands of international importance (Ramsar Sites) as well as for all other wetlands 'as far as possible' (Article 3).

Ramsar defines 'wise use' as:

"The maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development."

Ecological character is defined as:

"The combination of the ecosystem components, processes and benefits/services that characterise the wetland at a given point in time."

Ramsar Parties need to report if the ecological character of a Ramsar Site has changed or is likely to change.

Where a wetland is of importance for waterbirds, and serious disturbance affects their numbers or distribution, this cannot be regarded as wise use of the site concerned and may result in a change in the ecological character of the site.

There is considerable information on the wise use concept, especially in Ramsar's [Handbook on wise use](#) [FR [ici](#), ES [aquí](#)].

Nature reserves and wetland management

Article 4 of the Convention requires Parties to undertake important actions for nature reserves and their management:

- **"...promote the conservation of wetlands and waterfowl by establishing nature reserves on wetlands, whether they are [designated as Ramsar Sites] or not, and provide adequately for their wardening."**
- **"...encourage research ... regarding wetlands and their flora and fauna."**
- **"...endeavour through management to increase waterfowl populations on appropriate wetlands."**
- **"...promote the training of personnel competent in ... wetland research, management and wardening."**

Management planning

Ramsar urges its Parties to establish management planning at all Ramsar Sites as well as other wetlands. Ramsar's management planning guidance is [here](#) [FR [ici](#), ES [aquí](#)]. This is covered in the following section.



The tidal wetlands of Barr Al Hikman in Oman hold over half a million waterbirds. It has recently been designated as a Ramsar Site and is one of the most important sites in the AEWa region. Photo: Taej Mundkur.

Other international legal frameworks also address disturbance

The broad legal requirements of the European Union's Birds Directive are similar to those of AEWa.

Article 5 prohibits the deliberate disturbance of wild birds during the breeding and rearing periods if that would affect their conservation status.

Member States need also to address serious disturbance negatively affects waterbirds within Special Protection Areas designated for them. Relevant EU guidance is [here](#) [FR [ici](#)].