



**Building capacities of local NGOs and early-career biologists in the Central Moroccan Atlantic and Cap Blanc (Lagouira - Morocco) in waterbird identification, monitoring, site management and Climate change impact assessment – Phase IV**



Participants and members of the **Association Khnifiss and Alliance Marocaine pour le climat et le développement durable (AMCDD)** at the Ramsar site Aftissat.



Participants and members of **Club AL Ajial** at Boujdour

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# I. Background and Justification

Due to its location straddling the Mediterranean and Saharan biomes, Morocco has two maritime fronts, Mediterranean to the north and Atlantic to the west, giving it 3,500 km of coastal wetlands. These are enriched by a large number of inland swamps, lakes, sebkhas and gueltas occupying coastal plains, mountains and Saharan plateaus. As this country is at the crossroads of several bird migration routes between Europe and tropical Africa, its wetlands provide key stopovers for millions of birds, of which nearly one million are believed to winter in the country. In Morocco, the International Waterbird Census (IWC) has been organized by the Scientific Institute since 1983. In its first phase, it was focused on ducks and coots, then extended to all waterbird species and to all regions from 1991. The gradual improvement in coverage and capacity is due to a large training program of national observers including Wadden Sea Flyway Initiative (WSFI) training support.

With many wetlands and a 3000 km coastline on the East Atlantic Flyway, Morocco plays a major role in supporting migratory and wintering waterbirds. At these wetlands, shorebirds are the most important in numbers and diversity, mainly due to the presence of several large coastal wetlands that constitute the principal stopover areas and feeding grounds for species wintering south of the Sahara. Of these areas the coastline between Dakhla and Lagouira (Cap Blanc) is numerically one of the most important wintering sites for waders along the East Atlantic Flyway, supporting hundred-thousands of waders during the northern winter.

Climate change is identified as a major threat to wetlands. Altered hydrology and rising temperature can change the biogeochemistry and function of a wetland to the degree that some important services might be turned into disservices. This means that they will, for example, no longer provide a water purification service and adversely they may start to decompose and release nutrients into the surface water. Moreover, a higher rate of decomposition than primary production (photosynthesis) may lead to a shift of their function from being a carbon sink to a source of carbon.

In 2017, 2018 and 2022 (first, second and third phases), field trainings on Waterbird identification and census were carried out in 6 different sites of the Atlantic Sahara of Morocco: Baie d'Ad Dakhla, Boujdour coastal wetlands, Saquiat AL Hamra in Laayoun, Guelmim and the Khnifiss Lagoon. 90 participants from six NGOs attended the training workshops and committed to participate in the IWC and advocate for wetland protection from local threats including climate change impacts. In winter 2023, WSFI supported two similar training workshops in the central Atlantic coast of Morocco, extending our training programme to universities and NGOs of southern and central coasts of Morocco including the area north of Lagouira at Cap Blanc<sup>1</sup>.

One of the greatest results and impacts of the past WFSI training carried out in 2017 and 2018 was the strong participation of local Sahraoui civil societies in advocating to nominate new Ramsar sites. As a consequence, 3 wetlands were classified under the Ramsar Convention:

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<sup>1</sup> Cap Blanc, locally called Ras Nouadhibou, is a peninsula shared between Morocco and Mauritania ([https://fr.wikipedia.org/wiki/Ras\\_Nouadhibou](https://fr.wikipedia.org/wiki/Ras_Nouadhibou)).

Oued Assaquia Al Hamra À La'youne (Site number: 2382), Côte Aftissate-Boujdour (Site number: 2377) and Sebkhât Imlili (Site number: 2323).

The 2023 (fourth) WFSI training came in response to more NGOs and people who have expressed their interest and who could not join the past ones. Therefore, one training was conducted in Boujdour in collaboration with local NGOs from Lagouira, Dakhla and the other along the Central Atlantic coast near Agadir. This new training aimed to enable more regular IWC surveys to be conducted at a much lower cost, and further build a much greater interest and involvement in the monitoring and management of less surveyed sites.

Thus, this project aimed to build capacity in the region in the identification and monitoring of waterbirds and in monitoring wetlands, including climate change impacts on local wetlands, also to promote discussion about adapted mitigation measures and site management. This approach should strengthen the ability of local NGOs, early-career conservationists, and students to play future proactive roles in monitoring wetlands in their areas, and also result in a more reliable and affordable monitoring programme, with further benefits expected, such as increased awareness of migratory birds and flyways as well as of climate change impacts.

## II. Actions

Two training workshops were held, one in Khnifiss and one in Boujdour. The main sites visited for training and surveys were Site 1: Cap Blanc (Lagouira<sup>2</sup>), Site 2: Massa Estuary, Site 3: Souss Estuary, and Site 4: Tamri Estuary (see map).



<sup>2</sup> Lagouira, La Güera, or La Agüera, is a town on the Atlantic coast, at the southernmost point of the Atlantic Moroccan Sahara, bordering Mauritania. Lagouira is located on the western side of Ras Nouadhibou (formerly Cape Blanc), a 65-kilometre long point, near the Mauritanian towns of Nouadhibou and Cansado.

A.1. Training of two groups, representing local associations from the Moroccan Central and southern Atlantic Coasts of Morocco in bird identification, census, site management and Threat monitoring (including climate change) (See map below):

A.2. Disseminate waterbird and wetlands monitoring guidelines in Arabic

A.3 Provide optical materials (binoculars) to the associations benefiting from project support

A.4. Disseminate the illustrated guide of waterbirds along the East Atlantic Flyway and train participants in how to use the guide

### III. Results

#### **R1. Two groups belonging to local NGOs and early-career biologist representatives are trained in Waterbird identification, monitoring and wetland site management, and climate change impact assessment**

Two training workshops on waterbird identification and monitoring, site management and Climate change impact assessment were organized from 09 to 11 January 2023 and from 24 to 26 January 2023 in the Moroccan Atlantic Sahara. Two local NGOs: *Club Ajjal/ Réseau Association Khnifiss* and *Alliance Marocaine pour le Climat et le Développement Durable (AMCDD)* and students of the *Higher Technology School of La'ayoun* have benefited from these training workshops.

Two of the participating NGOs are members of the alliance “AMCDD” and are leading local civil societies in the Sahara that advocate for the protection of Saharan Biodiversity, natural areas including wetlands and promoting Saharan culture. Civil society organization are also concerned by climate change impacts, especially by coastal erosion leading to the salinization of coastal aquifers, and by the long drought that seriously affects natural habitats, important for people and wildlife. There is particular concern for migratory birds as this part of Morocco constitutes a migration relay between the Western Palearctic and the Sahel.

During this 4<sup>th</sup> phase of capacity building, we targeted new wetlands for surveying: [Souss Estuary \(4\)](#), [Massa Estuary \(3\)](#), [Aftissat \(2\)](#) and [Cintra Bay north of Lagouira \(1\)](#).

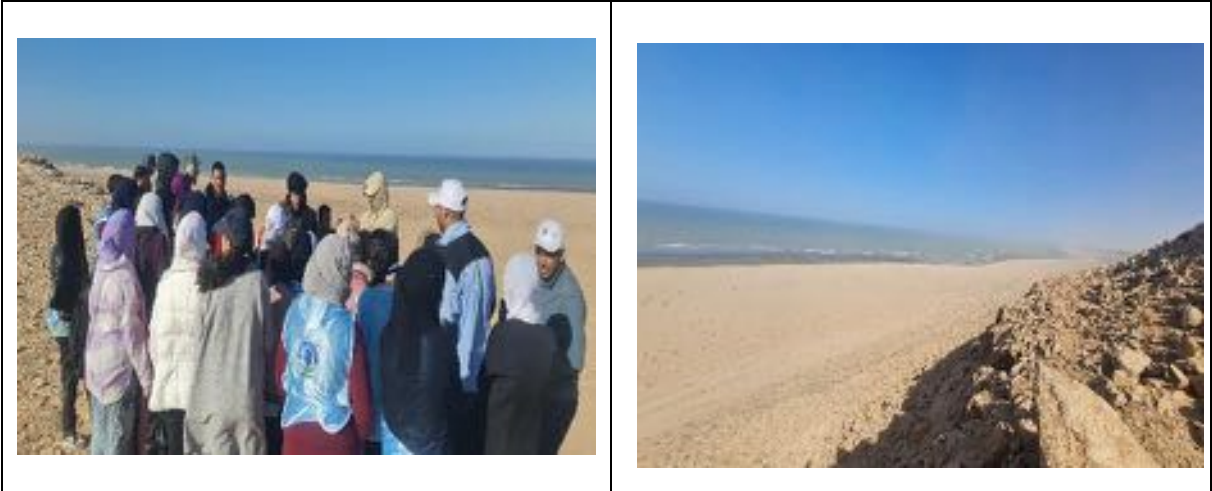
Two Ramsar sites, Massa and Souss, are on the edge of the Sahara and classified as Infra-Mediterranean wetlands with extensive vegetation cover featuring a Macaronesian bioclimate (Dakki, 2022). Moreover, they are listed as Important Bird & Biodiversity Areas (IBAs) (Magin, 1995) and SIBEs (Site d'Intérêt Biologique et Écologique) according to the Moroccan Protected Areas Master Plan (BCEOM-SECA,1995).

Further south, two other wetlands, Aftissate (recently classed as a Ramsar site in 2020) and Cintra Bay and the coast north of Cap Blanc near Lagouira, also belong to the Saharan bioclimate and are occasionally covered by Morocco's IWC campaign. However, they are much less visited, and therefore their value for migratory waterbirds is underestimated or even unknown. All the target sites occur along the East Atlantic Flyway and attract many thousands of waterbirds each winter and throughout the year.

The first training took place at Khnifiss Lagoon (28°03'N 12°15'W) while the second training took place in Boujdour city (25°48'10"N 14°35'59"W). Both trainings analyzed the current situation and management of different target sites in terms of governance and participation of local communities. We also addressed local wetland threats by focusing on climate change effects and discussing potential solutions by adaptations inspired from local and ancestral knowledge. The beneficiaries were mainly university students, undergraduate teachers, site managers and / or voluntary members of the local NGOs.



In total, 13 participants attended the training in Khnifiss Lagoon, including one representative of the Moroccan wildlife conservation authority, the *Agence Nationale des Eaux et Forêts* (ANEF), and 35 participants attended the training in Boujdour. Of these 48 trainees, 31% were women and 69% men. The participants demonstrated the strong interest of the civil society in wetlands management and protection and climate change related issues. Further, more than 20 teenagers (girls and boys) actively participated in a cleaning campaign of the Khnifiss lagoon and the port of Boujdour from solid waste.

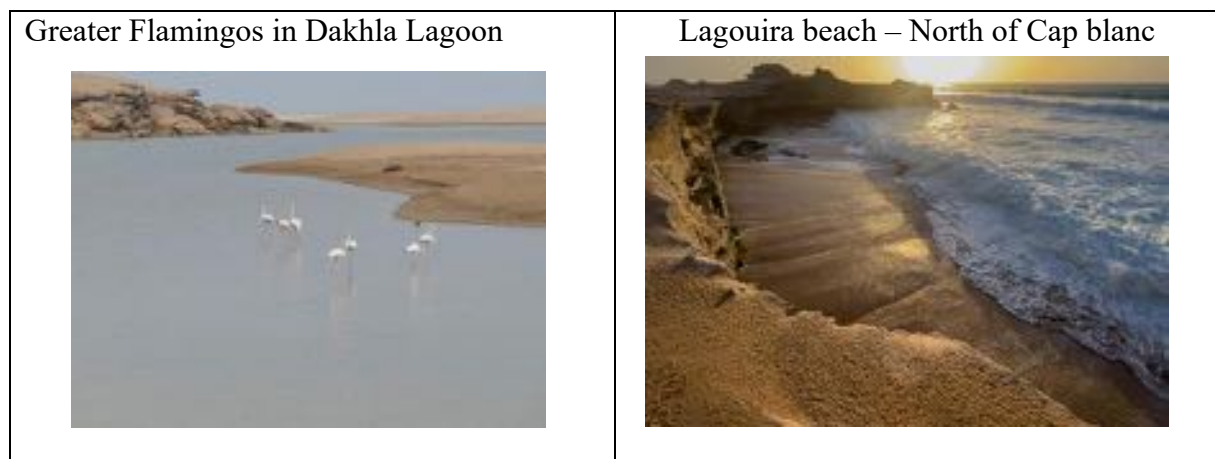


The new trained associations were informed about the significance of Saharan wetlands as well as the importance of waterbirds. A total of 7 persons participated in the 2023 IWC at Souss-Massa, Khnifiss, Aftissate and the coast north of Cap Blanc Lagouira. Furthermore, the

members of the association are willing to actively participate in site management and waterbird monitoring in the future. They will collect data on birds, climate change impact and habitat occupation in the wetlands occurring in their respective region. Additionally, they have committed to work and advocate for wetlands protection and threat mitigation.

However, the associations have confessed that the training should be replicated and completed with more extensive training and exchange to expand and consolidate their skills. However, they expressed the need to raise funds for protecting their wetlands and perform monitoring which is another challenging aspect. Although, they will rely on volunteering and advocacy in order to mainstream the protection of wetlands in the regional/provincial planning.

They expressed their strong acknowledgement to the Common Wadden Sea Secretariat for offering them this training opportunity.



Three participants from previous trainings in 2017, 2018 and 2021 attended this fourth phase session to demonstrate their learning and how they have used their knowledge to perform waterbird censuses and wetland surveys during previous years in their respective regions. The training workshops were carried out according to the programs in Annex I.

## **R2. Presentations on waterbird and wetland monitoring developed in Arabic**

All the course documents were developed and presented in Arabic. The WFI logo was displayed in all PowerPoint files. As previously recommended during the former training, The Toolkit on identifying and counting waterbirds in Africa (Hecker N., 2012. Identification et comptage des oiseaux d'eau en Afrique : Des outils pour le formateur – Nord de l'Afrique. ONCFS, Hirundo-FT2E, France) was also used.

## **R3. Binoculars distributed**

6 pairs of binoculars “Discovery WP PC Mg 8x42” were purchased and given to two NGOs.

## **R4. Field guides**

A supplementary set of 40 illustrated (WSFI) guides of waterbird field guides were disseminated to the 3 NGOs, and the use of the guide was well understood.

## IV. Communication and visibility

The two training activities were covered by local social media and local TV (Laayoun National TV) (see photos and links below). All photos of the trainings are provided in a separate file (Annex II).

Association Ajjal has invited two local broadcast centers to cover the training in order to make a greater impact of the event on the citizen of Boujdour. The main purpose was to inform about wetlands and the Ramsar convention, the Ramsar sites in the Saharan region in general and Boujdour in particular and the importance of waterbird census, history and the role of bioindicators for habitat and climate changes.

Imad interviewed for a podcast on the training



Opening of the training by Ajjal association with the participation of the main stakeholders. The opening was covered by media

Below are links to the podcast on the WFSI training phase IV in Morocco:

<https://www.youtube.com/watch?v=w-7YDNzzV20&feature=youtu.be>

[https://www.youtube.com/watch?v=u3\\_8sJV3t1U&feature=youtu.be](https://www.youtube.com/watch?v=u3_8sJV3t1U&feature=youtu.be)

<https://www.youtube.com/watch?v=aciuqli3I3w&feature=youtu.be>

## V. Waterbird census and observations

Waterbird censuses were carried out at 8 different wetlands, and results already shared with the IWC coordinator Pr. Mohamed Dakki ([dakki@israbat.ac.ma](mailto:dakki@israbat.ac.ma)). Some significant numbers of waterbirds were confirmed for this year at the key sites visited, as well as in Dakhla Lagoon and further south toward Cintra Bay and Lagouira; (results in Annex III in separate file).

The census was conducted in 10 Saharan and pre-Saharan wetlands between Agadir in the North and Cap-Blanc in the south. A total of 99,694 waterbirds was counted representing 133 species. Lesser Black-backed Gull *Larus fuscus* was the most abundant water/seabird in this Saharan part of the world. By taxonomic group, waders were the most dominant family with 61,173 birds followed by Laridae with 30,567 birds. Both groups represent 92% of the total waterbirds wintering in 10 coastal wetlands of the Moroccan Sahara.

Preliminary results confirm the high numbers found last year in Dakhla of Eurasian Spoonbill *Platalea leucorodia* (n=120), Ruddy Turnstone *Arenaria interpres* (n=4500), Pied Avocet *Recurvirostra avosetta* (n=3400), Eurasian Oystercatcher *Haematopus ostralegus* (n=5200), Black-headed Gull *Chroicocephalus ridibundus* (n=420), Atlantic Puffin *Fratercula arctica* and Razorbill *Alca torda*, among others.

There was an outstanding observation of Northern Bald Ibis *Geronticus eremita* flying over the bay of Boujdour on 25<sup>th</sup> January 2023 (photo below). This Endangered species is resident in Morocco, centred at Massa and Tamri near Agadir. However, dispersion has been reported as far south as to northern Mauritania.



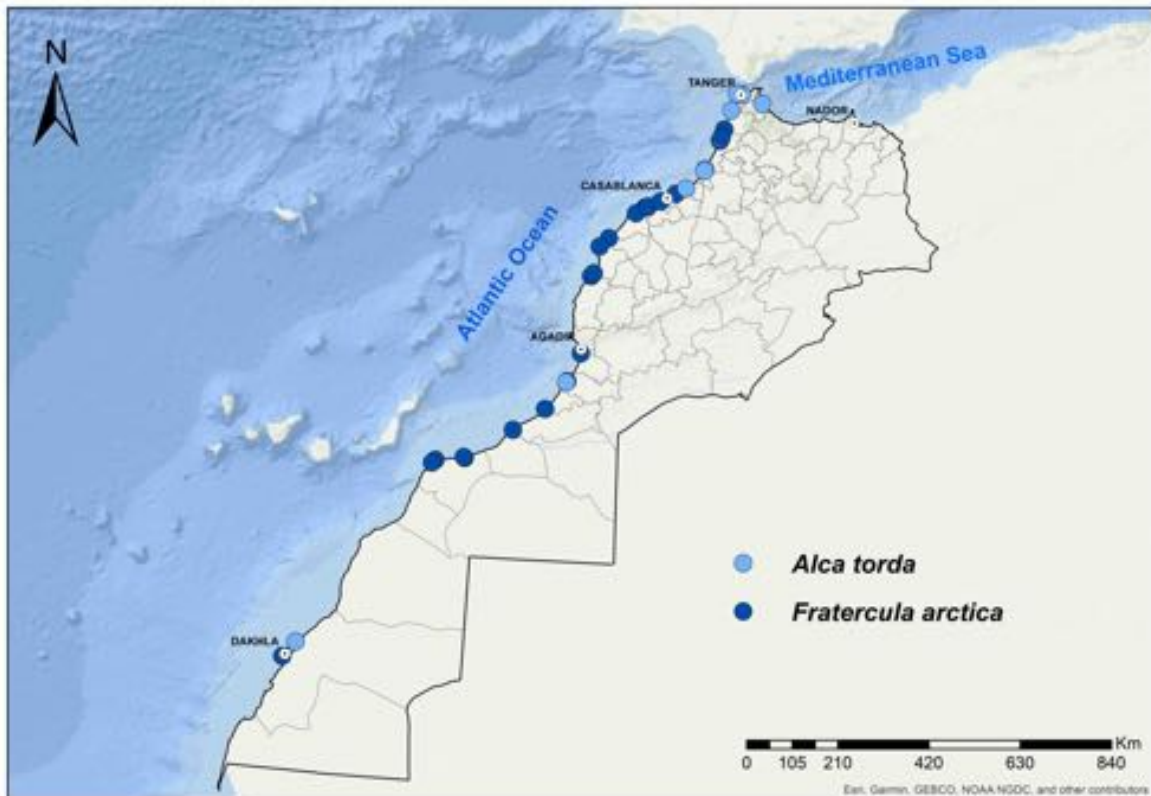


Another exceptional observation was an African Crane *Crex egregia*, the fourth record for Morocco, seen in La'ayoun city. Unfortunately, the bird was dead (photo below).



Significant numbers of Atlantic Puffins, Razorbills and other seabirds were found dead or exhausted during the field trips and from other sources of information (see Annex IV). We also provide a distribution map of the locations where the two seabirds were found. All bird mortality cases were announced to “Agence Nationale des Eaux et Forêts (ANEF), and their corpses were taken for autopsy. The preliminary conclusion being communicated by ANEF is that the dead birds were starving.

The records of Atlantic Puffins and Razorbills wintering as far south as Dakhla Bay is highly noteworthy. To our knowledge, there are no previous sightings of Razorbill and Puffin in Dakhla.



According to the autopsy outcome, there was no detection of avian flu (H1N1) or any other disease. However, the stomach of the dead birds was empty which probably led to the conclusion that the cause of the death was starvation.

Razorbill *Alca torda* in Dakhla Bay



Atlantic Puffin *Fratercula arctica* near  
Khnifiss Lagoon

Eurasian Spoonbill *Platalea leucorodia* near  
Boujdour



The Vulnerable Common Pochard *Aythya  
ferina* in Wad Saquiat AL Hmara (Laayoun)



Whimbrel *Numenius phaeopus*



Common Tern *Sterna hirundo*



## VI. Recommendations

This is the fourth time that WFSI has supported capacity-building training in Morocco focusing on waterbird identification and monitoring as well as site management and threat analysis. These series of training have had a significant impact on local communities in southern Morocco. The training workshops have led to the identification of key wetlands in the extreme south of the western Palearctic region and how important they are for migratory waterbirds along the East Atlantic Flyway. This effort has led other initiatives to recognize the importance of two wetlands under the Ramsar Convention on Wetlands: Côte Aftissate-Boujdour and Oued Assaquia Al Hamra at La'youné (27°08'07"N 13°12'27" W) in 2019.

We strongly recommend extending south-south cooperation between Morocco and Mauritania and developing a transboundary project aiming at raising awareness and building capacities in site management and threat management of wetlands for Arabic-speaking communities of the Sahara. AMCDD, Association Khnifiss and Club Ajial have agreed to start contacting NGOs from Mauritania to initiate collaboration on wetlands conservation and monitoring including waterbirds, climate change and site management.

Thus, the Cap Blanc peninsula could be a good start for transboundary collaboration between Morocco and Mauritania because this area, to which access is almost forbidden, can be open for research and biodiversity monitoring including waterbirds. Cap Blanc is also known to hold one of the last Atlantic populations of the Endangered Atlantic Monk seal (*Monachus monachus*).

## Annex I – Training Programmes 1 & 2

 <p>بناء قدرات الجمعيات المحلية في الصحراء الأطلسية المغربية في التعرف ورصد الطيور المائية، تدير الأراضي الرطبة وتأثير التغيرات المناخية Renforcement des capacités des associations locales du Sahara atlantique rain dans l'identification et la suivi des oiseaux d'eau, gestion des site et menaces des changement climatique</p> <p>Khnifiss09 12 janvier 2023 Formateur: Pr. Sidi Imad CHERKAOUI</p>  										
jour	9h -10h	10h-11h	11h-12h	12h-12h30	13h30-14h	14h-15h	15h-16h	16h-17h	17h-18h	18h —
09 January 23	Enregistrement Tour de table introductions/ programme	Les Zones humides et oiseaux d'eau (OE) Directives sur/les zones humides et Oiseaux d'eau	Aproche voie de migration: initiative Wadden Sea, Wetlands International, AEWA et Ramsar	Evaluation des menaces des zones humides de la région en relation avec les CC Questions/débat	Pause-déjeuner	Technique d'identification, comptage et suivi des oiseaux d'eau au Maroc.	Rabat - Agadir - Kiffis Legnes			
10 January 23	Plan de la journée	Observation des oiseaux à <b>Affasset, Port de Boujdour</b> et Oued Saquiât Al Hamra ou une autre zone humide (IWC)			Pause-déjeuner					
11 January 23	Khnifiss ou Agadir - Rabat									

 <p>بناء قدرات الجمعيات المحلية في الصحراء الأطلسية المغربية في التعرف ورصد الطيور المائية، تدير الأراضي الرطبة وتأثير التغيرات المناخية Renforcement des capacités des associations locales du Sahara atlantique rain dans l'identification et la suivi des oiseaux d'eau, gestion des site et menaces des changement climatique</p> <p>Boujdour 24 26 janvier 2023 Formateur: Pr. Sidi Imad CHERKAOUI</p>  										
jour	9h -10h	10h-11h	11h-12h	12h-12h30	13h30-14h	14h-15h	15h-16h	16h-17h	17h-18h	
24 January 23	Enregistrement Tour de table introductions/ programme	Les Zones humides et oiseaux d'eau (OE) Directives sur/les zones humides et Oiseaux d'eau	Aproche voie de migration: initiative Wadden Sea, Wetlands International, AEWA et Ramsar	Evaluation des menaces des zones humides de la région en relation avec les CC Questions/débat	Pause-déjeuner	Technique d'identification, comptage et suivi des oiseaux d'eau au Maroc.	Voyage Rabat Boujdour - IWC			
25 January 23	Plan de la journée	Observation des oiseaux à <b>Affasset, Port de Boujdour</b> et Oued Saquiât Al Hamra ou une autre zone humide (IWC)			Pause-déjeuner					
26 January 23	Départ La'ayoun - Rabat									

Colour key: Workshop/theoretical part Fieldwork/IWC Trainer's trip