AFRICAN SEA TURTLE NEWSLETTER

Cabo Verdean World Champion kitesurfer, Mitu Monteiro, rescues a loggerhead sea turtle tangled in plastic in the waters of Sal Island, Cabo Verde.

photo: ©Gabriele Rumbolo

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CONTENTS

GUEST EDITORIAL

Wanderings in Wonderland: Reflections on Africa

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I only recently saw my first turtles underwater, green turtles, at “Alice in Wonderland”. This is no fantasy world but a dive site just off Anse La Mouche in the Seychelles. The grace and poise with which they swam was one of the most riveting sights I have ever seen. Almost hypnotized I tried following one of them and strayed from the group much to the displeasure of my dive master.

As you must have guessed by now, I am no turtle expert. I am an ecologist by training who has been working in the development sector for the past 20 years. To put it very broadly, my work focuses on improving the engagement of rural and urban communities with the different elements of their environment. This includes supporting community-based natural resource management, co-creating mechanisms for promoting the stewardship of ecosystem services, developing toolkits and processes for local governments assessing climate risks and defining resilience-building interventions.

I am a strong believer in the interconnectedness of all components within systems and between systems, even those that are not intuitively apparent. Therefore, turtles swimming between continents, navigating the high seas, are a part of the systems I work and live within. My lifestyle choices and consumption patterns affect their wellbeing, and their health is proportionately indicative of the quality of the environment that I, and future generations will, live in. They are a part of our individual webs of life, whether we admit it or not.

It is significant to me that the lives of turtles begin on the fringes of the environment in which we human beings are the most comfortable and best adapted to – land. It is in such fringe areas, where systems overlap, that there are high levels of both diversity and opportunities. Limited by sectoral thinking and approaches that drive us towards optimization rather than harmonization, we fail to recognize and leverage synergies. The need for greater coordination and collaboration across levels of government, non-government practitioners and researchers, has been expressed over and over by all stakeholders, but its implementation remains elusive. This means that we continue addressing resource management and conservation in isolation of its linkages to other ecosystems and social practices, looking to build efficient models that are straightjacketed by their conceptualization and design. We focus on remedying symptoms instead of treating root causes. This in turn reduces our resilience to shocks and stresses that are becoming more frequent and unpredictable. We are quickly getting to thresholds, tipping other species over, and initiating irreversible and undesirable pathways of transformation. The consequences of these decisions and actions have to be borne by other species and future generations. There are ongoing efforts towards adopting systems-based approaches, but a more ‘revolutionary’ change in mindsets is urgently required.

Traveling in a few countries in Africa such as Ethiopia, Madagascar, Seychelles and Zimbabwe, over the last three months, I have witnessed and heard about the transformation

that is rapidly taking place on this continent. The three major phenomena of our times, namely, globalization, urbanization and climate change and their impacts are apparent in Africa. Foreign investors are jostling to get a foothold in the African markets, cities are expanding and placing increasing pressure on resources, and the recently-experienced El Niño has had devastating impacts on the agriculture sector. These are some of the significant opportunities and challenges that the countries in this rapidly emerging continent are faced with. There are vast resources, opportunities and talents here. Africa presents us with a chance of doing things differently. It is not as yet locked-in to conventional pathways that are both resource and carbon-intensive, though that does seem to be happening quite quickly. There is a choice to be made. Do we go down the pathways of growth and development that have been followed so far and largely created the challenging situation we now find ourselves in, or forge new paradigms of inclusive growth and prosperity that are being experimented with at the local level and debated and aspired for at the global level? 'Inclusive' here refers to all living beings, while our existing understanding of 'prosperity' would need some major realignment.

'Innovation' is currently one of the global buzzwords that represents this need for alternative approaches given our rapidly changing contexts. The term is generally expressed in terms of technological advancements. However, an aspect that needs to be steadfastly explored and promoted is innovation on the socio-ecological front. The dependence of human beings on the services that ecosystems provide is well established but grossly under appreciated. Socio-ecological systems refer to this interconnectedness. Extractive practices have had a disproportionate emphasis on the social component of this symbiotic relationship. The situation now demands that we restore the balance. Some global efforts and resources – e.g. The Economics of Ecosystems and Biodiversity (TEEB), the Global Footprint Network to mention a few – have been dedicated to assessing and promoting the conservation of ecosystem services, sensitizing and capacitating decision makers and planners in this regard, as well as designing and implementing approaches that adequately reward or compensate the improved management of such services. However, the thinking and action that they promote are currently more the exception than the norm. Mechanisms that acknowledge and leverage social and ecological aspects in a balanced manner would push us towards developing improved and holistic understanding of our environment, and looking for solutions at the systemic level.

We need to step out of a wonderland that we have created in our minds in which we are all-powerful and indestructible, and humbly take our place in the system of life. The consequences of not doing so are constantly in the news these days in terms of devastating flooding events, super typhoons, droughts, social unrest and terrorism, coming in from all around the world. I believe that Nature and its species, including turtles, will find a way to endure. The fundamental question is, "will we, human beings, find our way?"

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Observations des tortues vertes, *Chelonia mydas,* et des tortues luths, *Dermochelys coriacea,* dans le golfe de Gabès

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Abstract: This work reports observations of strandings and bycatch of green and leatherback turtles in the Gulf of Gabès from 2004 to 2015. A total of 14 green turtles (6 stranded and 8 incidentally captured) and 9 leatherbacks (5 stranded and 4 accidentally captured) were recorded. Green turtles interact mainly with the bottom trawl while leatherbacks are primarily caught by trammel nets and gill nets. The size structure and the temporal distribution of the observed turtles are discussed.

Introduction: En Méditerranée, trois espèces de tortues marines sont rencontrées: la tortue caouanne (*Caretta caretta*, Linnaeus 1758), la tortue luth (*Dermochelys coriacea*, Vandelli 1761) et la tortue verte (*Chelonia mydas*, Linnaeus 1758). Les tortues luths ont été mentionnées dans l'ensemble de la Méditerranée (Casale *et al.* 2003). Des pontes de cette espèce y ont été signalées en Sicile (Bruno 1970; 1978), mais jamais confirmées depuis. Les deux autres espèces se reproduisent en Méditerranée et sont génétiquement isolés de leurs congénères de l'océan Atlantique (Encalada *et al*. 1996, 1998). La tortue caouanne a été signalée pour la première fois du golfe de Gabès par Servonet (1889) et ensuite par Mayet (1903) et Seurat (1934), de Tunis et Bizerte par Olivier (1896) et de Sfax par Mosauer (1934), et de toutes les côtes tunisiennes par Domergue (1966). Les premières données sur les tortues marines en Tunisie ont débutés avec Blanc (1908) et Heldt (1933). Ce dernier a inventorié les captures de luths dans le golfe de Gabès.

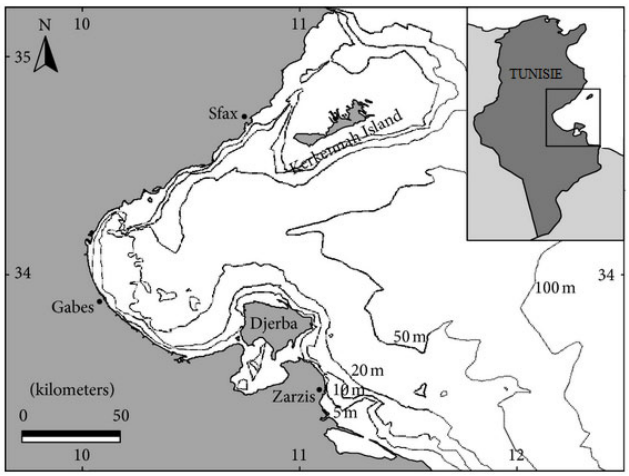

Figure 1. Carte du golfe de Gabès.

Figure 2. Tortue luth observée à l'île de Djerba (tortue N° 18).

La nidification de la tortue caouanne est mentionnée en Tunisie par Blanc (1935), Knoepffler (1962) et Argano (1979). Il faudra attendre une mission de prospection du WWF-France pour un véritable inventaire des sites de ponte tunisiens et la découverte le 1 septembre 1988 d'un nid de tortue caouanne sur l'île de la Grande Kuriat (Laurent 1988; Laurent *et al.* 1990). Les activités de recherche se sont ensuite diversifiées et ont concerné principalement le suivi de la nidification des tortues caouannes, l'interaction avec la pêche, les études

génétiques et l'étude des échouages (Jribi 2003; Jribi *et al.* 2007; Bradai *et al.* 2008; Echwikhi *et al*. 2011 et références incluses; Chaieb *et al.* 2012; Jribi and Bradai 2014).

En 2004 et suite à la signalisation de plusieurs cas d'échouages depuis le commencement des travaux de recherche sur les tortues marines, un réseau d'échouages aussi bien pour les tortues marines que pour les cétacés a été mis en place sur toutes les côtes tunisiennes. Ce réseau avait comme mission principale d'intervenir en urgence à toute signalisation d'échouages d'individus morts ou vivants, dans le but de secourir et d'obtenir un maximum de données biologiques et écologiques ainsi que des informations sur les causes de mortalités.

Dans ce qui suit, nous présentons une analyse des observations (échouages et captures accidentelles) de la tortue verte et de la tortue luth dans le golfe de Gabès. L'analyse concernera la période entre 2004 et 2015.

Matériel et méthodes: *Site d'étude*—Appelé par les anciens navigateurs "petite syrte", le golfe de Gabès (Fig. 1) situé sur la façade sud-est de la Tunisie, s'étend de Ras Kapoudia, au niveau des parallèles 35° nord, jusqu'à la frontière tunisio-lybienne. Le golfe de Gabès est caractérisé par un plateau continental très étendu, à pente douce et rarement interrompu par des accidents rocheux; la longueur de ces côtes est estimée à environ 750 km représentant 58% des côtes tunisiennes (Bradai 2000). Une profondeur de 60 m est atteinte à environ 110 km de la côte (Hamza 2003).

Collecte des informations—L'installation du réseau national d'échouage des tortues marines et des cétacés depuis 2004 a permis de collecter beaucoup de données sur les échouages et les observations en mer de ces espèces menacées. Les informations sur les observations (captures accidentelles et échouages) des tortues marines ont été collectées suite à des signalisations par les autorités de pêche, les organisations non gouvernementales et les utilisateurs de la mer. Les données rassemblées sont mentionnées sur des fiches préalablement préparées. Elles concernent principalement : la date et le lieu de l'observation, l'espèce, et d'autres informations tel que l'identification du sexe, les mensurations, et les prélèvements effectués.

Figure 3. Tortue verte capturée accidentellement à Kerkennah.
a. Photo d'un pêcheur avec une tortue verte juvénile (tortue N°19).
b. Libération d'une tortue verte (tortue N°2).

Tableau 1. Observations de tortues vertes (*Chelonia mydas*) et des tortues luths (*Dermochelys coriacea*) dans le golfe de Gabès (2004-2015).

N°	Date	Lieu	SCCL (cm)	Sexe	Espèce	Observations
1	25/12/2004	Kerkennah	35,5	?	Tortue verte	Echouage en bon état
2	28/02/2005	Kerkennah	36	?	Tortue verte	Capture accidentelle (Mini-chalut) libérée par une équipe de l'INSTM (figure 3)
3	16/05/2005	Gabès	98,5	F	Tortue verte	Echouage décomposé
4	12/02/2006	Kerkennah	186	F	Tortue luth	Capture accidentelle (Filet trémail, profondeur =10 m)
5	25/06/2006	Kerkennah	65,5	?	Tortue verte	Capture accidentelle (Mini-chalut)
6	12/12/2006	Kerkennah	45	?	Tortue verte	Capture accidentelle (Mini-chalut)
7	09/05/2007	Djerba	170	?	Tortue luth	Echouage décomposé
8	02/07/2007	Zarzis	105	F	Tortue verte	Echouage récent
9	04/06/2008	Gabès	180	?	Tortue luth	Echouage décomposé
10	06/06/2008	Zarzis	80	F	Tortue verte	Echouage décomposé
11	17/06/2008	Zarzis	83,5	F	Tortue verte	Echouage décomposé
12	29/07/2008	Gabès	132	?	Tortue luth	Echouage putréfié
13	12/06/2010	Sfax	110	?	Tortue luth	Echouage putréfié
14	15/07/2010	Djerba	115	F	Tortue verte	Capture accidentelle (Chalut benthique)
15	07/08/2010	Zarzis	120	?	Tortue luth	Echouage putréfié
16	08/11/2010	Zarzis	44	?	Tortue verte	Echouage (uniquement la carapace a été trouvée)
17	11/04/2011	Kerkennah	110	F	Tortue verte	Capture accidentelle (Pêcherie fixe Charfia)
18	02/06/2013	Djerba	100	?	Tortue luth	Capture accidentelle (Filet maillant, profondeur= 5-10m) (figure 2)
19	23/04/2014	Kerkennah	40	?	Tortue verte	Capture accidentelle (Mini-chalut), libérée par les pêcheurs (figure 3)
20	18/06/2014	Zarzis	50	?	Tortue verte	Capture accidentelle (Filet maillant)
21	Juillet 2014	Zarzis	120	?	Tortue luth	Capture accidentelle (Filet maillant), libérée par les pêcheurs
22	11/09/2014	Kerkennah	65	?	Tortue verte	Capture accidentelle (Filet maillant)
23	19/12/2015	Kerkennah	110	?	Tortue luth	Capture accidentelle (Filet maillant, profondeur = 5-10m)

INSTM: Institut National des Sciences et Technologies de la Mer.

La maturité sexuelle des tortues est déterminée en se basant sur la longueur courbe de la carapace (SCCL). En Méditerranée, les tortues vertes ayant un SCCL supérieure à 70 cm sont considérées comme adultes (Demetropoulos and Hadjichristophorou 1995). Etant donné que les sites de nidification des luths de Méditerranée sont inconnus et que pour les tortues luths la longueur minimale de la carapace des femelles matures varie en fonction des localités et des populations (Stewart *et al.* 2007), on a choisit la longueur courbe de la carapace SCCL = 145 cm comme une longueur arbitraire minimale pour la détermination de la maturité en se basant sur l'aspect général de la queue (Stewart *et al.* 2007).

Résultats et discussion: Au total, 23 tortues (14 vertes et 9 luths) ont été enregistrées entre décembre 2004 et décembre 2015 (Tableau 1).

Tortues vertes—Quatorze tortues vertes (6 échouées et 8 capturées accidentellement) ont été recensées dans le golfe de Gabès. Ces tortues se composent d'immatures et de matures (SCCL moyenne de 69,5 +/- 29 cm). Les adultes sont recensés uniquement pendant la période printanière (2 individus) et

estivale (4 individus) alors que les immatures sont dénombrés durant toute l'année (Fig. 4).

Il est a signaler que la période estivale enregistre la majorité des cas enregistrés: 3 captures (tortues N° 5,14, et 20) et 3 échouages (tortues N° 8,10, et 11) (Tableau 1). Selon Limpus *et al.* (1994), les tortues vertes ne peuvent se rapprocher des côtes qu'après avoir atteint une taille qui leur assure une vulnérabilité moindre face aux prédateurs. A titre d'exemple, les premières longueurs courbes de carapace mesurées près des côtes peuvent aller de 20 cm aux Bahamas (Bjorndal and Bolten 1988) à 39 cm à Europa (Bourjea *et al.* 2006). La longueur de 35,5 cm observée pour les tortues présentes dans le golfe de Gabès est aussi observée à Hawaii (Balazs 1980) et à Queensland (Limpus *et al.* 1994). D'autres juvéniles en phases néritiques (SCCL entre 30-40 cm) sont rapportés dans plusieurs autres populations (Bjorndal and Bolten 1988; Reich *et al.* 2007). Le passage du stade océanique au stade néritique est progressif et variable suivant les régions considérées.

Les signalisations des tortues vertes dans le golfe de Gabès montrent que ces tortues interagissent beaucoup avec le mini-chalut (4 cas de captures) mais aussi avec les filets maillants (2 cas de capture), le chalut benthique (1 cas de capture) et avec la pêcherie fixe "la charfia" (1 cas de capture) (Tableau 1).

Le golfe de Gabès, identifiée comme une destination propice pour l'alimentation des tortues vertes en Méditerranée (Broderick *et al.* 2007; Stokes *et al.* 2015), constituerait de ce fait un point chaud pour la conservation de ces espèces dans la région.

Tortues luths— La distribution de la fréquence de taille des tortues luths dans le golfe de Gabès montre une SCCL moyenne de 134 +/- 33,10 cm; les individus de petites tailles sont peu représentés par rapport aux individus adultes qui sont observés essentiellement pendant la période estivale (Fig. 5).

L'accroissement du nombre d'observations de la tortue luth dans le sud tunisien durant la période estivale vérifierait le schéma de migration de cette espèce en Méditerranée proposé par Crespo *et al.* (1988). Ce schéma migratoire stipule que les tortues luths pénètrent en Méditerranée au printemps et que leur nombre augmente pendant la période estivale pour diminuer ensuite lors de la migration inverse vers l'Atlantique.

Malgré le fait que la tortue luth soit connue comme espèce océanique qui ne présente pas, au cours de son développement, de phase néritique (Bolten 2003), ces Chéloniens peuvent se rapprocher des eaux peu profondes du sud de la Tunisie durant la période estivale pour se nourrir. Un comportement identique a été aussi décrit en Caroline du Nord où les tortues luths sont recensées à des faibles profondeurs au début du mois de mai en coïncidence avec l'apparition des méduses (Epperly *et al.* 1995). La tortue luth a été aussi signalée dans les eaux australiennes dans le plateau continental à des profondeurs de 3 m (Limpus 2009). La présence des tortues luths dans le golfe de Gabès serait en partie en relation avec l'accroissement de l'apparition de la méduse *Rhizostoma pulmo* dans la région durant la période estivale (Bradai *et al.* 2004); cette méduse est en effet une proie préférentielle de la tortue luth (Duguy 1983).

La distribution de la fréquence des classes d'âges des tortues luths dans le golfe de Gabès montre que les individus de petites tailles sont peu représentés. Ceci serait expliqué par le fait que ces tortues passent une majorité de leurs phases juvéniles dans les eaux tropicales atlantiques à cause des contraintes thermiques (Eckert 2002). L'étude des interactions des tortues luths avec les activités de pêche dans le golfe de Gabès montre que ces Chéloniens étaient majoritairement capturés à de faibles profondeurs par les filets trémails et les filets maillants (Karaa *et al.* 2013). Ces engins de pêche causent, en effet, les dégâts les plus importants sur les tortus luths entrant en

Méditerranée (36,6% des captures totales selon Casale *et al.* 2003).

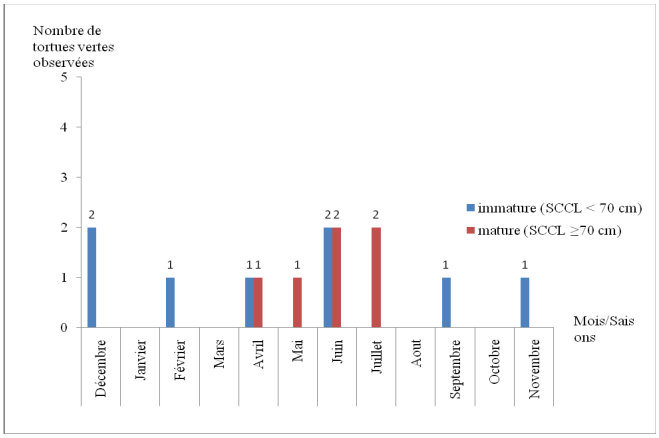

Figure 4. Répartition temporelle de la fréquence des classes d'âges des tortues.

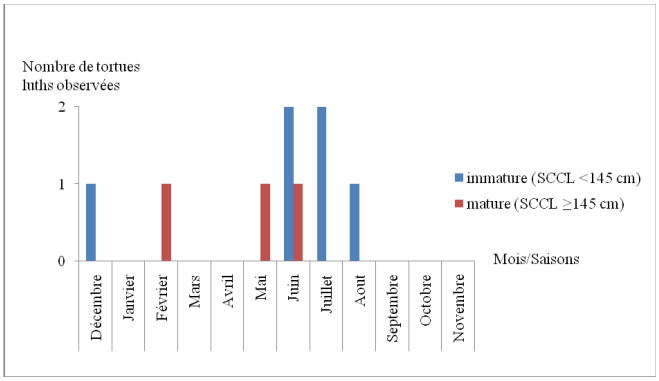

Figure 5. Répartition temporelle de la fréquence de classe de tailles des tortues luths dans le golfe de Gabès (période 2004-2015).

Conclusions et recommandations:
L'analyse de la base de données des observations de tortues luths et de tortues vertes dans le golfe de Gabès atteste une régularité de leur présence dans la région.

Pour élaborer une stratégie de conservation efficace pour les tortues vertes et luths en Tunisie, il serait important de comprendre davantage leurs déplacements entre leurs différents habitats de la région. La collecte systématique des données et le soutien des programmes d'éducation et de sensibilisation, en particulier pour les pêcheurs et les utilisateurs de la mer pourraient aider à mieux comprendre l'importance des eaux tunisiennes dans la vie de ces Chéloniens en Méditerranée. Le suivi satellitaire de ces espèces serait d'une grande importance pour pouvoir établir une carte des zones clefs (aires d'alimentation, aires de repos, routes de migration, etc.) et ensuite élaborer pour une meilleure stratégie de leur conservation.

Références

Argano, R. 1979. Preliminary report on Western Mediterranean sea turtles. WWF Report Project N° 1474. 19 pp.

Balazs, G.H. 1980. Synopsis of biological data on the green turtle in the Hawaiian Islands. NOAA Technical Memo NMFS-SWFSC 7: 1-141.

Bjorndal, K.A. and A.B. Bolten. 1988. Growth rates of immature green turtles, *Chelonia mydas*, on feeding grounds in the southern Bahamas Copeia 3: 555-564.

Blanc, M. 1908. Sur les Reptiles de Provence. Feuilles du Jeune Naturaliste 34: 192.

Blanc, M. 1935. Faune tunisienne. Dactyl., Tunis. 280 pp.

Bolten, A.B. 2003.Variation in sea turtle life history patterns: neritic vs oceanic developmental stages. P. 243-257. *In*: P.L. Lutz, J.A. Musick, and J. Wyneken (Eds.) The Biology of Sea Turtles Volume II. CRC Press, Boca Raton. Florida. 472 pp.

Bourjea, J., S. Ciccione, and R. Rats Imbazafy. 2006. Marine turtle surveys in Nosy Iranja Kely, north-western Madagascar. Western Indian Ocean Journal of Marine Science 5: 209-212.

Bradaï, M.N. 2000. Diversité du peuplement ichtyologique et contribution à la connaissance des sparidés du Golfe de Gabès. Thèse de doctorat d'Etat Es-sciences Naturelles; Faculté des sciences de Sfax. 600 pp.

Bradaï, M.N., S. Karaa, I. Jribi, A. Elouaer, O. Chaieb, H. Elhili, L. Ben Naceur, and K. Maatoug. 2008. Rapport relatif au réseau

national d'échouages des tortues marines et des cétacés: Bilan 2006-2007. INSTM. 53 pp.

Bradai, M.N., P. Nicolosi, P. Casale, I. Jribi, M. Turchetto, and A. El Abed. 2004. The presence of leatherback turtles in the central Mediterranean area: data from Italy and Tunisia. Presenza di tartarughe lioto nel Mediterraneo centrale: Dati racolti in Italia e Tunisia. Biologia Marina Mediterranea 11: 750-753.

Broderick, A.C., M.S. Coyne, W.J. Fuller, F. Glen, and B.J. Godley. 2007. Fidelity and over-wintering of sea turtles. Proceedings of the Royal Society 274: 1533-1538.

Bruno, S. 1970. Anfibi e rattili di Sicilia. Atti della Academia Gioenia di Scienze Naturali in Catania, 2: 3-144.

Bruno, S. 1978. Le tartarughe nei mari italiani e nel Mediterraneo. Natura e Montagna 3: 5-17.

Casale, P., P. Nicolosi, D. Freggi, M. Turchetto, and R. Argano. 2003. Leatherback turtles (*Dermochelys coriacea*) in Italy and the Mediterranean basin. Herpetological Journal 13: 135-139.

Chaieb, O., A. Elouaer, F. Maffucci, S, Karaa, M.N. Bradai, H, ElHili, F. Bentivegna, K. Said, and N. Chatti. 2012. Population structure and dispersal pattern of loggerhead sea turtles *Caretta caretta* along Tunisian coastal waters, Central Mediterranean. Endangered Species Research 18: 35-45.

Crespo, J., J.A. Caminas, and J.C. Rey. 1988. Considérations sur la présence de tortues luth *Dermochelys coriacea* (Linnaeus, 1758) dans la Mediterranée occidentale. Rapport Commission Internationale Mer Méditerranée 31: 284.

Demetropoulos, A. and M. Hadjichritophorou. 1995. Manual on Marine Turtle Conservation in the Mediterranean. UNEP(MAP)SPA/IUCN/CWS/Fisheries Department, MANRE (Cyprus). 24 pp.

Domergue, C. A. 1966. Liste des batraciens, chéloniens et sauriens de Tunisie et d'Afrique du nord. Bulletin Société des Sciences Naturelles de Tunisie 9-10: 75-79.

Duguy, R. 1983. La Tortue luth (Dermochelys coriacea) sur les côtes de France. Annales de la Société de Sciences naturelles de la Charente-Maritime, Supplément. 38 pp.

Echwikhi, K., I. Jribi, A. Bouain, and M.N. Bradai. 2011. Loggerhead turtle bycatch in the Gulf of Gabès, Tunisia: An overview. Marine Turtle Newsletter 131: 9-12.

Encalada S.E., K.A. Bjorndal, A.B. Bolten, J.C. Zurita, B. Schroeder, E. Possardt, C.J. Sears, and B.W. Bowen.1998. Population structure of loggerhead turtle (*Caretta caretta*) nesting colonies in the Atlantic and Mediterranean regions as inferred from mtDNA control region sequences. Marine Biology 130: 567-575.

Encalada, S.E., P.N. Lahanas, K.A. Bjorndal, A.B. Bolten, M.M Miyamoto, and B.W Bowen. 1996. Phylogeography and population structure of the Atlantic and Mediterranean green turtle *Chelonia mydas*: a mitochondrial DNA control region sequence assessment. Molecular Ecology 5: 473-483.

Eckert, S.A. 2002. Distribution of juvenile leatherback sea turtle *Dermochelys coriacea* sightings. Marine Ecology Progress Series 230: 289-293.

Epperly, S.P., J. Braun, and A. Veishlow. 1995. Sea turtles in North Carolina waters. Conservation Biology. 9: 384-394.

Hamza, A. 2003. Le statut du phytoplancton dans le golfe de Gabès. Thèse de Doctorat en Sciences Biologiques. Faculté des Sciences de Sfax. Université de Sfax. 297 pp.

Heldt, H. 1933. La tortue luth Sphargis coriacea (L.). Captures faites sur les côtes tunisiennes (1930-1933). Contribution à l'étude anatomique et biologique de l'espèce. Annales Station Océanographique de Salammbô 8: 1-40.

Jribi, I. 2003. Etude de la reproduction et des interactions avec la pêche de la tortue marine *Caretta caretta* pour un objectif de

conservation. Thèse de Doctorat en Sciences Biologiques. Faculté des Sciences de Sfax. Université de Sfax. 167 pp.

Jribi, I and M.N. Bradai. 2014. Sex ratio estimations of loggerhead sea turtle hatchlings at Kuriat Islands, Tunisia: Can minor nesting sites contribute to compensate globally female-biased sex ratio? The Scientific World Journal. Article ID 419410. 8 pp.

Jribi, I., M.N. Bradai, and A. Bouain. 2007. Impact of trawl fishery on marine turtles in the Gulf of Gabès (Tunisia). Herpetological Journal 17: 110-114.

Karaa, S., I. Jribi, I., A. Bouain, M. Girondot, and M.N. Bradaï, 2013. On the occurrence of leatherback turtles *Dermochelys coriacea* (Vandelli, 1761), in Tunisian waters (Central Mediterranean Sea) (Testudines: dermochelydae). Herpetozoa 2: 65- 75.

Knoepffler, L. P. 1962. Une curieuse anomalie de la carapace chez *Caretta caretta* L. Vie et Milieu 13: 237-33.

Laurent, L. 1988. Les tortues marines de Tunisie. Rapport WWF-France, miméograph. 21 pp.

Laurent, L., S. Nouira, A. Jeudy De Grissac, and M.N. Bradai. 1990. Les tortues marines de Tunisie : premières données. Bulletin de la Société Herpétologique de France. 53: 1-17.

Limpus, C. 2009. A biological review of Australian marine turtle species: 6. Leatherback turtle, *Dermochelys coriacea* (Vandelli). Report to the Queensland Government environment protection agency. Brisbane. Queensland Environmental Protection Agency. 29 pp.

Limpus, C.J., T.A. Walker, and J. West. 1994. Post-hatchling sea turtle specimens and records from the Australian region Pp 95-100. *In*: R. James (Ed.) Proceedings of the Australian Marine Turtle Conservation Workshop. November 1990. ANCA: Canberra.

Mayet, Y. 1903. Catalogue raisonné des Reptiles et Batraciens de la Tunisie. Exploration Scientifique de la Tunisie. Paris. 30 pp.

Mosauer, W. 1934. The Reptiles and Amphibians of Tunisia. Publications of the University of California at Los Angeles Biological Sciences 1: 49-64.

Olivier, E. (1896). Matériaux pour la faune de la Tunisie. I. Catalogue des Reptiles. Notes sur les Mammifères-Oiseaux. Revue Scientifique du Bourbonnais et Centre France, Moulins 9: 117-133.

Reich, K.J., K.A. Bjorndal, and A.B. Bolten. 2007. The “lost years” of green turtles: using stable isotopes to study cryptic lifestages. Biology Letters 3: 712-714.

Servonet, J. 1889. Les pêches dans le golfe de Gabès. Revue Maritime et Coloniale 101: 142-161.

Seurat, L. C. 1934. Formations littorals et estuaries de la Syrie Mineure (golfe de Gabès). Bulletin Station Océanographique de Salammbô 32: 8-54.

Stewart, K.R., C. Johnson, and M.H. Godfrey. 2007. The minimum size of leatherbacks at reproductive maturity, with a review of sizes for nesting females from the Indian, Atlantic, and Pacific Ocean basins. Herpetological Journal 17: 123-128.

Stokes K. L., A.C. Broderick, A.F. Canbolat, O. Candan, W.J. Fuller, F. Glen, Y. Levy, A.F. Rees, G. Rilov, R.T. Snape, I. Stott, D. Tchernov, and B.J. Godley. 2015. Migratory corridors and foraging hotspots: critical habitats identified for Mediterranean green turtles. Diversity and Distributions 19: 834-844.

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The Kitesurfing Community on Sal Island, Cabo Verde: An Ally for Sea Turtle Conservation

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Sal Island is located in the Cabo Verdean archipelago, approximately 500 km off the west coast of Africa. Cabo Verde supports the second largest population of loggerhead sea turtles, *Caretta caretta,* in the Atlantic (Marco *et al.* 2011) with the beaches of Sal hosting annually between 1,200 to 2,500 nests (ADTMA 2008 – 2014 and Projeto Biodiversidade 2015 nesting season reports) although this year (2016) we have already exceeded 4,100 nests!

Every year, the tourism industry brings thousands of visitors to Sal Island. This industry is threatening the main nesting habitats of loggerheads, but it is also creating new opportunities for the local communities. One such community benefiting from tourism is the surfing community. Cabo Verde is well known for its strong winds and waves, and kitesurfers from all over Europe come to Sal during the dry season, (December to April). However, the real surfing community is formed by young Cabo Verdeans who have found a way of life that is connected to the sea.

Kitesurfing in Sal has several meanings: it means job opportunities for the local youth who will become kitesurfing instructors; it means pride, with young surfers taking the colours of their flag all over the world; it means *morabeza* and no stress; and finally, it means love for the oceans and its creatures.

Although the windy season does not coincide with the loggerhead nesting season, the surfing community can play an important role in sea turtle conservation. A perfect example is when the former World Kitesurf Champion (2008) Mitu Monteiro, a Cabo Verdean, rescued a loggerhead turtle with his board while kitesurfing. He found it entangled in plastic and kitesurfed it back to the beach (Fig.1), where it was helped by other kitesurfers (Fig. 2). This is no surprise because the surfing community loves the sea and is an advocate for the protection of sea turtles and the oceans.

Figure 1. (Photo:Gabriele Rumbolo)

Figure 2. (Photo: Gabriele Rumbolo)

This year on Sal, Projeto Biodiversidade's sea turtle field camp is located at the Kite School (Fig. 3-4) owned by Mitu Monteiro and his friend and associate Djo Silva, another famous kite surfer.

Figure 3. (Photo credit: Projeto Biodiversidade)

Figure 4. (Photo credit: Projeto Biodiversidade)

By allowing the sea turtle project to use the Kite School premises, we have been able to improve the field camp conditions for the field staff, thereby increasing their motivation and the efficiency of beach patrols. We have also increased the visibility of our conservation work within the local community, especially those connected to tourism and kitesurfing, by making the project more transparent and inclusive. Finally, this collaboration has allowed the Kite School to stay open during the summer months (when it is normally closed), which has provided an opportunity to keep the employees and generate income from other tourism-related activities. Through this community of Cabo Verdean surfers, we hope to reach more broadly into the hearts and minds of the local communities and finally tip the local balance in favour of sea turtle conservation.

Despite the fast-paced development of the island, the increased availability of job opportunities and the sea turtle conservation efforts over the past 9 years, poaching on adult female turtles is still not decreasing. Pressure from the local communities on the population of Sal, including government entities, can actually help conservation by changing public opinion.

Literature Cited

Marco, A.E., E. Abella, C. Monzón-Argüello, C. Martins, S. Araujo, and L. López Jurado. 2011. The international importance of the archipelago of Cape Verde for marine turtles, in particular the loggerhead turtle *Caretta caretta*. Zoologia Caboverdiana 2: 1-11.

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A New Clutch Size Record from an Olive Ridley Sea Turtle Nest in Cameroon

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During a 2012-2014 survey of nesting beaches between Eboundja and Mbendji in Cameroon (the future Marine National Park of Manyange na Elombo - Campo), an exceptionally large olive ridley clutch was recorded. On 12 December 2012, our local team found an olive ridley preparing to nest at the edge of the vegetation line between the village of Ebodjé and the Likodo river estuary. Its curved carapace length was 72 cm and its curved carapace width was 73 cm. The nest was threatened by erosion, and was relocated to a safer area, which allowed for an accurate egg count. There were 178 eggs laid in this one nest!

Marquez (1990) summarized the average clutch size for olive ridleys from around the world.

Table 1. Average clutch size of olive ridleys recorded in different countries. Data compiled from Marquez (1990).

Country	Average clutch size	n
Australia	108.0	6
Brazil	123.0	57
Costa Rica (Pacific coast)	105.1	20
Guyana	167.0	50
Honduras	108.3	50
India	113	9
Mexico	105.3	1,120
Oman	118	-
Suriname	116	1,154

In Sri Lanka, Deraniyagala (1939) indicated that a clutch ranges from 90 to 135 eggs. In Suriname, where olive ridleys have been extensively studied, Pritchard (1969) calculated an average of 116.07 (n= 928 clutches) with the largest clutch containing 168 eggs. Schulz (1975) examined 1,154 nests on Eilanti beach in Suriname and no clutch exceeded 160 eggs. However, the largest clutch size appears to have been recorded in Pirambu, Brazil: 182 eggs (mean=100.1 eggs; range=4–182; n=6480; Da Silva et al. 2007). The olive ridley clutch size of 178 eggs recorded in Cameroon would be the second largest clutch size ever recorded in the literature for olive ridleys!

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Literature Cited

Da Silva, A.C.C.D., J. C. de Castilhos, G. G. Lopez and P.C.R. Barata. 2007. Nesting biology and conservation of the olive ridley sea turtle (*Lepidochelys olivacea*) in Brazil, 1991/1992 to 2002/2003. Journal of the Marine Biological Association of the UK 87: 1047–1056.

Deraniyagala P. E. P. 1939. The Tetrapod Reptiles of Ceylon. Volume I. Testudinates and Crocodilians. Colombo Museum Natural History Series, Colombo, Ceylon, and Dulau and Co., Ltd., England. 412 pp.

Márquez M. R. 1990. Sea turtles of the world. An annotated and illustrated catalogue of sea turtle species known to date. FAO Species Catalog, FAO Fisheries Synopsis 11: 1-81.

Pritchard P. C. H. 1969. Studies of the systematics and reproductive cycles of the genus *Lepidochelys*. Dissertation University of Florida. 197 pp.

Schulz J. P. 1975. Sea Turtles nesting in Surinam. Nederlandsche Commissie voor Internationale Natuurbescherming 23 :1-143.

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Pêche illégale dans le Parc National de Pongara, Gabon - une véritable menace

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Abstract: Pongara National Park is part of a network of National Parks created in Gabon in 2002, which cover approximately 11% of the country's surface. Among the wide variety of habitats found in the Park, mangroves and beaches are important for sea turtle populations as well as for a number of other invaluable ecological roles. The leatherbacks, olive ridleys, green turtles and hawksbills of Pongara are threatened by egg poachers on the nesting beaches and artisanal fisheries in their feeding and developmental habitat. However, the regular presence of the Park's ecoguards, through terrestrial and marine patrols, represents an effective response to these threats. Anti-poaching, awareness raising, data-collection and ecotourism are all essential activities conducted by the Park's ecoguards, contributing to the protection of sea turtles and their habitats.

Le Gabon est un pays d'Afrique centrale bordé par l'océan Atlantique. Sa superficie s'étend sur 267 668km^2 et est recouverte à 80% par la forêt équatoriale. Le 30 aout 2002, le feu président Omar Bongo Ondimba prenait la décision historique de créer 13 parcs nationaux.

Dans un monde où les étendue sauvages authentiques et les cultures originales se font de plus en plus rare, le Gabon est un paradis terrestre unique et remarquablement bien préservé. Cela est possible grâce à la protection de 11% du territoire, soit plus de 30 000 km^2, qui est dédié à la gestion durable de l'écosystème au sein des 13 parcs nationaux.

Le Parc National de Pongara a une superficie de 92 969 ha. Il est caractérisé par une diversité élevée d'habitats naturels, du fait d'une couverture végétale variée et peu modifiée par l'exploitation forestière. Sur les 80 000 ha de mangrove qu'abrite la rive gauche de l'estuaire du Komo, au moins 45 000 ha sont inclus dans le Parc National de Pongara. La mangrove joue un véritable rôle de nurserie pour la reproduction des poissons et crevettes. A cette variété de type de formations végétales est associée une importante biodiversité végétale et animale que relève les inventaires floristiques et de quelques groupes zoologiques (mammifères, oiseaux, reptiles, amphibiens, poissons) pour la conservation des espèces phares, la valorisation du patrimoine historique et de l'écotourisme, en partenariat avec les communautés locales. Le Parc National de Pongara fait aussi partie des sites RAMSAR depuis le 2 février 2002.

Deuxième site d'importance national pour la ponte des tortues luths sur sa façade atlantique, le parc abrite aussi des tortues vertes juvéniles en alimentation ainsi que des tortues olivâtres en inter-ponte, qui vont dans l'estuaire du Komo et possiblement dans les rivières entourées de mangroves.

Pêcheurs de tiré-tiré à l'Estuaire du Komo écogardes (Photo: V. Angouet/ANPN).

Ces différentes populations de tortues marines sont menacées de plusieurs façons: les braconniers qui prennent les œufs sur la plage et la pêche artisanale. En effet, les pêcheurs utilisent des filets ou des palangres dans l'Estuaire et vont jusque dans les rivières du Parc, pourtant strictement interdit à la pêche. Aussi pratiquent t-ils sur la façade atlantique la pêche à la lignes à mains et les filets dormant; les tortues de ce fait peuvent être prises dans les filets ou encore ingurgiter les hameçons, qui restent bloqués dans leur œsophage.

Pour lutter contre ces menaces, le travail des écogardes est indispensable. D'une part, leur seule présence dans le parc dissuade les braconniers de venir prendre les œufs sur la plage. D'autre part, les patrouilles régulières en bateau permettent de contrôler la pêche illégale. Depuis 3 ans, le nombre accru de patrouille a entrainé une diminution de la pêche illégale dans le parc.

Les principales activités menées par les écogardes et qui ont conduit à un résultat assez probant sur le contrôle de la pêche sont:

- La lutte anti braconnage. Les écogardes effectuent des patrouilles maritimes et terrestres, que ce soit de jour ou de nuit. Il y a aussi des postes fixes qui permettent de contrôler les usagers sortants du parc.
- La sensibilisation. Les agents du parc sensibilisent les populations locales au cours de leurs patrouilles dans les villages et le grand public qui fréquente principalement la Pointe Denis.
- La recherche. Les écogardes collectent des données sur la faune et la flore et appuient les programmes scientifiques spécifiques à leur parc.
- Le tourisme. Les agents accompagnent les touristes pour des observations et mettent en place des circuits touristiques au sein du parc.

Retenons en outre, que les missions de patrouille et de surveillance sont organisées en moyenne une fois dans le mois pour une durée de 14 jours. L'objectif des ces missions est de veiller aux respects des zones de pêches attribués aux pêcheurs, les prises etc.

Prise de sardines durant le tiré-tiré et contrôle des prises par les écogardes (Photo: V. Angouet/ANPN).

Ainsi pour l'année 2014, 108 moteurs hors-bord en situation illégale furent saisis dans le Parc de Pongara par les écogardes. En conséquences, ces contrôles continuent, permettant de pouvoir réguler les activités de pêches et de veiller à la protection de certaines espèces, notamment les tortues marines.

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Diani Turtle Watch: Monitoring Sea Turtle Nesting on Kenya's South Coast

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For several years, Local Ocean Conservation (LOC, formerly known as Local Ocean Trust) had been receiving ad hoc reports of nesting sea turtles and stranded specimens along the south coast of Kenya, mainly Kwale County. Community based Turtle Conservation Groups (TCGs) had become dormant, with the exception of the Msambweni TCG, leaving most of Kwale County without coordinated monitoring efforts. Reports of nesting activity and direct take of nesting females from concerned stakeholders continued and although the main area of operation of LOC is about 150 km north of Kwale County around the Watamu area in Kilifi County, LOC staff decided that this situation could no longer be ignored. A dialogue with the South Coast Residents Association was opened to explore the possibility of starting a small scale, volunteer-based sea turtle conservation programme. The response was positive and in 2012 the two first sea turtle monitors were recruited and sent to Watamu for training by LOC. Further meetings were held in the following months and the Diani Turtle Watch (DTW) programme was founded, under the auspices of LOC.

DTW operates within Kwale County on the south coast of Kenya, from Tiwi to Kinondo and on Chale Island and Funzi Island (Fig. 1).

The area is characterised by coral sand beaches interspersed with cliffs. The long beach in Diani is one of Kenya's most popular beach holiday destinations and there are a large number of hotels, resorts and private houses. Many of these have developed the supralittoral zone and constructed seawalls, thus rendering much of the Diani area unsuitable for turtle nesting. To the south and north of Diani there is less development and the beaches are largely pristine. Chale Island and Funzi Island are characterised by shorter stretches of beach (100 m to 500 m) interspersed by cliffs.

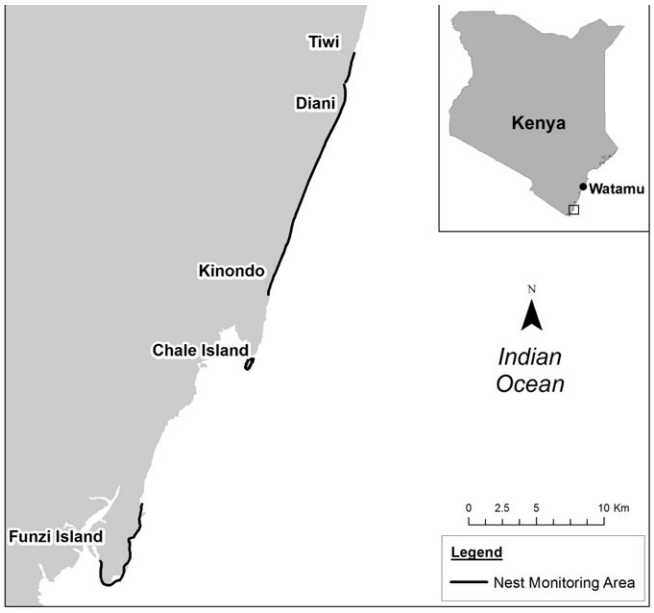

Figure 1. Area of operation of Diani Turtle Watch.

The DTW team has now grown to 12 monitors who have all completed a one-week training program with LOC consisting of both theory and practical sessions including sea turtle biology, beach surveys, collection of nesting data and nest monitoring (Fig. 2). Practical training in field protocols is provided so that monitors are fully aware of how to locate the egg chamber, relocate nests, monitor for signs of hatching and conduct a post-hatching excavation. The training is conducted during the peak of the nesting season to maximize opportunities for the trainees to encounter nesting females and practice field protocols in real conditions. DTW monitors receive regular refresher training from LOC staff.

Figure 2. DTW monitor training at LOC in Watamu (*Photo: Local Ocean Conservation*).

DTW Actions on the Ground:

Nest Monitoring: DTW monitors patrol nesting beaches early in the morning and identify new nests through observations of nesting tracks. Information about the new nest is relayed to the DTW coordinator, who adds an entry to a data book and then passes the news to LOC in Watamu. The nest is monitored throughout the incubation period and if possible, the monitor is present when the hatchlings emerge to minimize predation as well as disturbance from onlookers.

Nest Relocations: Nests laid in unsuitable locations are relocated to safer areas by DTW monitors. Nests are only relocated if 1) it is at risk of tidal inundation, 2) it was laid in an area of high human traffic or 3) it was laid in an area with a high risk of poaching (Fig. 3).

Post-hatching excavations: Four days after hatching the nest is excavated by the monitors. The contents of the nest are counted and categorised as empty shells, undeveloped, early developed, mid developed and late developed eggs, micro eggs, depredated eggs, yolkless eggs and dead pipped and live pipped eggs. The number of dead or alive hatchlings found in the nest is recorded. The shade cover of the nest site is also recorded and the top and bottom depths of the nest are measured.

Figure 3. DTW monitor relocating a nest in Diani (*Photo: Local Ocean Conservation*).

Beach assessments: Once a year, the LOC team together with the DTW monitors conduct a beach assessment, whereby the beach is categorized into four groups: 1) Good nesting and relocation areas, 2) potential nesting areas, 3) naturally unsuitable and 4) human impact areas. Good nesting areas consist of sandy beaches with a gentle slope, natural vegetation with little to no noise or light pollution, away from areas of high human traffic. Potential nesting areas are described as beach sections where turtles can nest but close monitoring of the nests would be required due to presence of disturbances such as light pollution, high human traffic or noise pollution. Naturally unsuitable areas are beach sections with rocky cliffs that make them unsuitable for sea turtle nesting. Human impact areas are characterized by obstacles such as seawalls and other structures, high levels of light and noise pollution, and high human traffic.

Table 1. Historic overview of the development of the Diani Turtle Watch programme.

Year	Activity	Monitors	Recorded Nests
2012	› October 2012 – Training of the first group of nest monitors › December 2012 – Follow up visit to Diani	2	4
2013	› February 2013 – First follow up visit to Diani › May 2013 – Nest monitors training › June 2013 – Nest monitors training › September 2013 – Follow up visit to Diani	6	3
2014	› February 2014 – Nest monitors training	8	37
2015	› April 2015 – Follow up visit to Diani › August 2015 – Nest monitors training › September 2015 – Follow up visit to Diani	10	32
2016	› March 2016 – Follow up visit to Diani › May 2016 – Nest monitors training › August 2016 – Follow up visit to Diani	12	62

The assessment is carried out using GPS and the recorded sections are analysed using GIS software.

Outreach: One of the reasons for the success of the DTW Program is that the monitors were recruited from a group of people who are closely dependent on the beach and the marine ecosystem for their livelihoods. DTW monitors are fishermen, curio sellers or boat operators. Due to the nature of their work the monitors are always on the beach so they can monitor sea turtle nests while still engaging in their livelihoods activities.

By elevating the 12 men to the status of Diani Turtle Watch Monitor, more people have become aware of the work they do and approach them with issues and queries related to sea turtles. As a result, most of their peers hold them in high regard and they have been using this exposure to conduct outreach work amongst their fellow fishermen and other people using the beach.

DTW Field Observations:

Sea Turtle Nesting Activity: Since the start of the DTW monitoring efforts, the number of recorded nests has increased from less than ten per year to more than sixty per year (Table 1). This dramatic increase can be largely attributed to the increase in monitoring effort due to the expansion of the DTW team. In cases where nesting females and hatchling emergences were observed by a monitor, they were identified to be green turtle (*Chelonia mydas*) nests.

Beach Assessment: A full assessment of the beach from Tiwi, north of Diani, to Kinondo, south of Diani, was carried out in two stages in 2015 and 2016 and showed that 36% of beach habitat was considered to be suitable for nesting (Table 2). A further 17% was considered to have potential for nesting, but close monitoring would be required. A total of 48% of the assessed beach was found to be unsuitable for nesting either because of natural reasons (18%) or because of anthropogenic factors (30%). The outcome of this mapping exercise will be shared with the relevant stakeholders to illustrate the perilous state of Kwale County's nesting beaches, but also the potential to restore nesting habitat by

Table 2. Overview of the state of the beaches from Tiwi to Kinondo in relation to the suitability for turtle nesting.

Nesting Beach Category	Total Length (m)	Percentage
Suitable nesting area & relocation sites	6,790	35.51%
Human impact areas	5,763	30.14%
Naturally unsuitable areas	3,368	17.61%
Potential nesting sites	3,203	16.74%
Total beach assessed	19,123	

reducing factors such as noise and light pollution.

Poaching Incidents: Several poaching incidents have been reported to DTW monitors and immediately relayed to the Kenya Wildlife Service (KWS) for further investigations into the incidents. In areas with several poaching incidents, the relevant DTW monitor organised meetings with the fishing community to discuss the importance of sea turtles to the marine ecosystem and explain national laws protecting them. It was observed that most fishermen were not aware of the legislation or the penalties involved for committing offences such as poaching. Current Kenyan legislation states that all species of sea turtle are protected and that killing a turtle or being in possession of any part of a turtle shall result in a fine of no less than 20 million Kenya Shillings (approximately US$ 200,000) and/or life imprisonment (The Wildlife and Conservation Act 2013, date of commencement: 10 January 2014).

LOC Oversight and Support:

As a LOC programme, DTW is supported and overseen by LOC staff. LOC conducts a 3-4 day visit to DTW monitors several times per year and remains in frequent telephone contact with them. During the LOC visits, the monitors are able to share their experiences, discuss challenges they face and learn from the more experienced LOC staff. Although DTW monitors are encouraged to meet as a team once per month, travel costs and working times of the monitors are challenging so the meetings with LOC staff are key to keeping the team motivated. To ensure the accuracy and consistency of data collected by the DTW monitors, LOC staff validates the data during their visits. All data collected in the previous months are checked with the DTW team and errors are discussed in order to maximize accuracy of future data.

Looking Ahead:

The establishment of the DTW programme has most certainly made a positive impact on sea turtle conservation in Kwale County. Accurate nesting data are being collected in areas where only sporadic and unreliable reports were available in the past. The presence of 12 DTW monitors at the beaches and in local communities is creating awareness of marine conservation efforts and poaching incidents are now properly reported to the relevant authorities for action. Future steps for the DTW programme will focus on cementing the position within coastal communities and continuing to build support from the entire stakeholder base. This will be achieved by working closely with the DTW monitors so that they can carry out more outreach activities in their respective communities. Some success has already

been achieved in Tiwi where a group of local fishermen have vowed to stop killing sea turtles and are helping the DTW monitor to control poaching. Additionally, LOC will assist the DTW monitors by ensuring that the relevant authorities and other conservation organisations are aware of their work and by engaging the tourism industry in Kwale to raise awareness and elicit support from their clients.

Acknowledgements: In its efforts relating to the Diani Turtle Watch programme, Local Ocean Conservation would like to acknowledge the support of the South Coast Residents Association, the Kenya Wildlife Service, the Maji Boutique Hotel, The Sands at Chale Resort and Colobus Conservation. Part of this work was made possible with a grant from SWOT. In particular, LOC would like to thank Luciana Parazzi, Vanessa Atkins, Jane Dean and Les Schwartz for their continued efforts to support this programme.

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Community Engagement in Sea Turtle Conservation in Lamu Seascape, Kenya

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They say it takes a village to raise a child. It takes a community to conserve and protect sea turtles. In Kenya, the Lamu Seascape on the northern coast is one of the most important sea turtle nesting sites in Kenya and a priority area for WWF. Sea turtle conservation efforts are focused within Kiunga Marine Protected Area: Kiwaiyu Island, Mkokoni, Mvundeni, Rubu Island and Kiunga. Collectively, these sites consist of 21 nesting beaches (Fig.1).

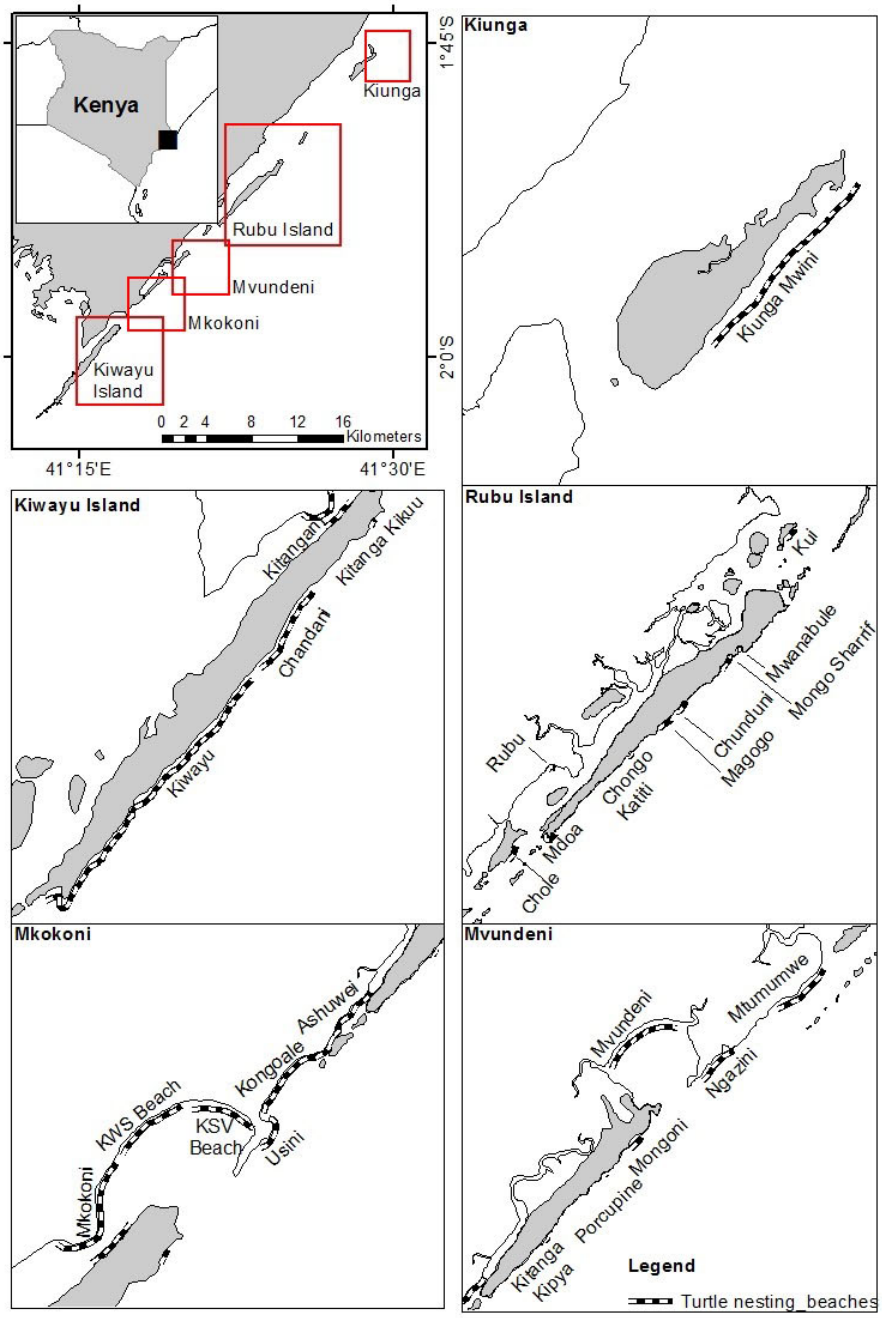

Figure 1. Location of nesting beaches in Kiunga Marine Protected Area.

WWF works closely with local community groups such as women's groups, school pupils and Turtle Conservation Groups to ensure effective monitoring of nesting beaches and to reduce threats to sea turtles from marine debris.

Turtle Conservation Groups (TCGs): TCGs are a network of youth groups engaged in sea turtle conservation activities. There are four TCGs in Kiunga MPA which cover Kiwaiyu, Mkokoni, Mvundeni, Rubu and Kiunga nesting sites. WWF partners with the TCGs to promote community ownership of sea turtle conservation and to provide livelihood support through establishment of sustainable projects such as ecotourism. Work programmes executed by TCGs include:

- Nest identification and verification, nest relocations, flipper tagging and hatchling release.
- Day and night beach and sea patrols to monitor nests and deter poaching and predation.
- Data collection on nesting activity, sea turtle mortalities and hatching success.

In the past two years, nests reported by TCGs contribute to approximately 50% of sea turtle nests recorded annually in Kenya (41% in 2015 and 60% in 2016). Nesting species are green turtles *(Chelonia mydas),* hawksbills *(Eretmochelys imbricata)* and olive ridleys (*Lepidochelys oliveacea).* Rubu Island supports the most concentrated nesting activity, contributing to 69% of all nests verified by TCGs.

Environmental education and awareness in schools: Environmental stewardship is a means to ensuring a more sustainable future. Young conservationists grow to become great ambassadors for sustainable resource use. It is essential that school pupils understand the importance of sea turtle conservation, threats facing sea turtles and their habitats and how they can help to conserve them, thus instilling a green (protection) consciousness among children.

WWF engages school pupils in sea turtle conservation through environmental clubs, which provide a platform for interaction and awareness creation on the importance of sea turtle conservation. School pupils contribute to field conservation activities such as beach cleanups to reduce threats to nesting turtles and emerging hatchlings. Recently, school pupils participated in an International Coastal Cleanup Day event and collected a total of 2,731 kilograms of marine debris from nesting beaches in Kiunga Marine Protected Area.

Trash to Cash Programme: Two ocean currents converge at Kiunga MPA, the north flowing East African current and the south flowing Somali current. The confluence of the two currents drags tons of debris on to the shores of the islands in the area. The debris litters the beaches and is a major hindrance to nesting sea turtles and emerging hatchlings.

In 1999, WWF initiated a 'Trash-to-Cash' programme in collaboration with communities residing within the MPA. The Trash-to-Cash programme creates a sustainable solution to the challenge of marine debris. Women and youth collect debris that washes up on Lamu's beaches and turn it into handicrafts such as animal sculptures, toys, jewelry, key rings, curtains and other small gifts to sell to tourists. This initiative led to the formation of the renowned flip-flop recycling company, Ocean Sole.

The flip-flop recycling venture has created jobs for local people while facilitating the cleanup of beaches critical for sea turtle nesting and local tourism. Kiwaiyu Women's Conservation Group is leading the way in flip-flop collection and ensuring the continuity of the project.

Looking forward to the future: The contribution of the community in the Lamu Seascape towards sea turtle conservation has played a vital part in protecting nesting

populations and has promoted strong local stewardship of marine resources. Moving forwards, WWF intends to establish new Turtle Conservation Groups in areas where there is nesting activity, but no current monitoring systems are in place. Linking the groups into a coordinated Turtle Conservation Group network is another key aim, which would contribute to the harmonisation of sea turtle conservation protocols along the Kenyan coast.

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FUNDING OPPORTUNITIES FOR INTERNATIONAL RESEARCH AND CONSERVATION

This list will continue to be updated and posted on Ocean Ecology Network's website: www.oceanecology.org

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World Bank Africa Fellowship Program
http://www.worldbank.org/en/region/afr/brief/world-bank-group-africa-fellowship-program

Australia Awards for Africa
http://www.australiaawardsafrica.org/

EDGE Fellowships (For hawksbills in the tropics)
EDGE of Existence programme (www.edgeofexistence.org) is the only global conservation initiative focusing specifically on threatened species that represent a significant amount of unique evolutionary history.

Ideawild (good for equipment)
http://www.ideawild.org/apply.html

Mohamad Bin Zayad Species Conservation Fund
http://www.speciesconservation.org/.

Endangered Species Trust
https://ptes.org/grants/

Lerner-Gray Grants from AMNH
https://myrggs.amnh.org/documents/admissions/lgint11.pdf

EarthWatch
http://earthwatch.org/scientific-research/scientist-opportunities/working-with-earthwatch
Earthwatch supports scientific field projects in topics of ecosystems and biodiversity in several world regions. Applicants to lead these field projects can be of any nationality. Earthwatch invites projects that have a strong rationale for using non-specialists (volunteers) to aid with data collection, scientific observation, or other research tasks.

Keidanren Nature Conservation Fund
http://www.keidanren.net/kncf/en/fund/about/
The Keidanren Fund supports field projects in environment, biodiversity, and natural resources in developing countries, with emphasis on the Asia-Pacific region. The program is open to groups and organizations with appropriate legal status, and at least three years of experience in nature conservation. Grants are for one year. Approximate amount = 30k. Past awards have been made for research, environmental education, and some conference funds. Keidanren has funded projects associated w/reef conservation, small scale fisheries, mangroves - see list of past supported projects on website.

Explorers Club -- Grants for Student Exploration and Field Research
https://explorers.org/expeditions/funding/expedition_grants
The Explorers Club makes grants to students for international field projects, including projects focusing on environment and natural resources. The Exploration Fund is for graduate and post-graduate students, including early-career post-doctoral students. There are no nationality restrictions.

International Initiative for Impact Evaluation (3ie) -- Transparency and Accountability in Governance of Natural Resources.
http://www.3ieimpact.org/en/funding/thematic-window/transparency-and-accountability-thematic-window/
3ie will fund up to two impact evaluations that aim to increase transparency and accountability in the governance of non-renewable natural resources such as oil, gas, minerals, and metals. Proposals should focus on impact evaluations of interventions in developing countries, with a preference for research in low-income countries. Applications are invited from research institutions and consortia.

Disney Worldwide Conservation Fund
https://thewaltdisneycompany.com/environment/#disney-conservation-fund
The Disney Worldwide Conservation Fund (DWCF) makes grants for wildlife studies, habitat protection, and community conservation and education in critical ecosystems around the world. DWCF supports projects that build on previous work, and that have the potential to contribute to long-term conservation. Eligibility extends to U.S. nonprofit organizations.

Save Our Seas
http://saveourseas.com/funding
Save Our Seas makes grants for marine research, conservation, and education worldwide.

Prince Albert II Foundation
http://www.fpa2.com/fondation.asp?page=deposez_vos_projets#
The Prince Albert II of Monaco Foundation makes grants for global environmental stability in themes of climate change, energy, biodiversity, access to water, and the fight against desertification. In each grants cycle, the Foundation defines priority focus areas within these themes.

Riverbanks Zoo and Garden -- International Wildlife Conservation
https://society.riverbanks.org/donate/conservation-support-fund
The Riverbanks Zoo and Garden (USA) makes grants for field conservation; habitat management; conservation education; ex situ captive breeding; animal health and welfare; and other themes in wildlife research and conservation.

U.S. Fish and Wildlife Service
https://www.fws.gov/international/grants-and-reporting/how-to-apply.html

Phoenix Zoo -- Grants for Conservation and Science
http://phoenixzoo.org/conservation/global-conservation/
The Phoenix Zoo (Arizona, USA) makes small grants to support wildlife conservation and science worldwide. Priority is for practical projects that help build capacity, and that involve local communities.

SeaWorld and Busch Gardens -- Conservation Fund
https://swbg-conservationfund.org/en/grant-seekers
The Conservation Fund makes grants for wildlife conservation, research, and education.

Rolex Awards
http://www.rolexawards.com/
The Rolex Awards for Enterprise support pioneering work in five areas: applied technology; cultural heritage; environment; exploration and discovery; and science and health. Projects are assessed on their originality, potential for impact, feasibility, and the candidates' own spirit of

enterprise..

PADI Foundation
http://www.padifoundation.org/
The PADI FOUNDATION encourages and supports underwater science, environmental projects, and education. The Foundation will fund and assist worthwhile projects that will enrich mankind's understanding of the aquatic environment and encourage sensitivity to and protection of the delicate ecological balance of underwater life.

Prince Bernhard Nature Fund
https://www.instrumentl.com/grants/prince-bernhard-nature-fund-grant
The Prince Bernhard Nature Fund aims to help save critically endangered flora and fauna in the tropical and subtropical regions of Africa, Asia and Latin America.

Rufford Small Grants for Nature Conservation
http://www.rufford.org/
The Rufford Small Grants Foundation provides funding for small nature/biodiversity conservation projects and pilot programmes in developing countries.

Columbus Zoo Wildlife Conservation Grants
https://globalimpact.columbuszoo.org/about/columbus-zoo-fund-for-conservation

Smith Fellowship (Post Doctoral)
http://www.conbio.org/mini-sites/smith-fellows
The David H. Smith Conservation Research Fellowship Program seeks to develop future world leaders and entrepreneurs who are successful at linking conservation science and application. Smith Fellowships provide two years of postdoctoral support to outstanding early-career scientists.

European Outdoor Conservation Association: Conservation Grants
https://www.instrumentl.com/grants/european-outdoor-conservation-association-conservation-grants

Conservation Trust Grant
https://www.instrumentl.com/grants/national-geographic-conservation-trust-grant

Maj and Tor Nessling Foundation: Environmental Research Grant
https://www.instrumentl.com/grants/maj-and-tor-nessling-foundation-environmental-research-grant

Brevard Zoo: Conservation Fund
https://www.instrumentl.com/grants/brevard-zoo-conservation-fundPostdoctoral

Honours and Undergraduate Student Travel Subsidy
https://www.instrumentl.com/grants/australian-wildlife-management-society-s-honours-and-undergraduate-student-travel-subsidy
Research, Conference / Training / Travel for Vanuatu, Fiji, Solomon Islands, Papua New Guinea, New Zealand, New Caledonia, Australia

Wildlife Acoustics Scientific Product Grant
https://www.instrumentl.com/grants/wildlife-acoustics-scientific-product-grant

United for a Sustainable Future Grant

https://www.instrumentl.com/grants/sea-pact-united-for-a-sustainable-future-grant

Paul M. Angell Family Foundation Conservation Grant
https://www.instrumentl.com/grants/paul-m-angell-family-foundation-paul-m-angell-family-foundation-conservation-grant

Waitt Foundation Rapid Ocean Conservation (ROC) Grant
https://www.instrumentl.com/grants/rapid-ocean-conservation-roc-grantAcademic

National Geographic Society
http://www.nationalgeographic.com/explorers/grants-programs/cre/

NGS-Conservation Trust
http://www.nationalgeographic.com/explorers/grants-programs/conservation-trust/

National Geographic Foundation for Science and Exploration—Asia
http://www.nationalgeographic.com/explorers/grants-programs/gef/asia/conservation/

Organization for Women in Science for the Developing World
http://owsd.ictp.it/resources/opportunities

British Ecological Society
http://www.britishecologicalsociety.org/funding/

Conservation Fund
https://swbg-conservationfund.org/en/grant-seekers

Congo Basin Grant Program
http://www.conservationactionresearch.net/congo-basin-grant-program.php

AuthorAID
http://www.authoraid.info/en/news/details/998/

Erasmus Mundus Graduate and Postdoctoral programmes in Europe for North Africans
http://www.al-idrisi.eu/index.php/en/

TWAS Research Grants
http://twas.org/opportunities/research-grants

Australia Awards for Africa
http://www.australiaawardsafrica.org/

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Disclaimer: *The opinions expressed in this newsletter are those of the individual authors and are not necessarily shared by the Editors, the Editorial Board, or any individuals or organizations supporting the newsletter.*

INSTRUCTIONS FOR AUTHORS

The African Sea Turtle Newsletter (ASTN) is a free, bi-annual international electronic publication about the biology and conservation of sea turtles in Africa, and the stories of people who work with sea turtles on this vast and diverse continent and its offshore islands. This publication hopes to increase communication and collaborations among all those working with sea turtles in Africa –scientists, conservationists, policy-makers, project managers, community members, students, professors, everyone!—as well as share news with the international sea turtle community.

Contributions can range from original scientific papers and natural history observations to opinions, anecdotes, local myths, taboos, pharmacopeia, and legends, as well as field experiences, workshops, education and awareness activities, and announcements. We will accept and publish contributions in English, French, Spanish, and Portuguese so that everyone can express themselves in the language they most feel comfortable.

SUBMISSIONS

Please follow the instructions for authors and submit your contribution to the appropriate Regional Editor:

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Email: aksissou@yahoo.fr and wafae.benhardouze@gmail.com
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Jacques Fretey
Email: jfretey@imatech.fr
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Lindsey West
Email: lindsey@seasense.org
Countries: Sudan, Eritrea, Djibouti, Somalia, Kenya, Tanzania, Mozambique, South Africa

All submissions should be sent to the Co-Editor(s) responsible for the country you are submitting information from and not to the members of the Editorial Board.

Submissions are welcome in English, French, Spanish, and Portuguese to represent the four major languages on the continent.

All submissions will be reviewed for content and formatting. A contact address should be given for all authors together with an email address for correspondence during the review process.

Text

To ensure a fast review, we ask that all submissions be in electronic form as a MS Word file (or text file) attached to an email. If email is not available, authors should contact the Editors to seek alternative arrangements. If internet or computer facilities are not available, a hard copy of the article can be sent to the Editors by mail or fax.

Scientific names should be italicized (e.g. *Dermochelys coriacea*) and given their full Latin name only in the first appearance.

Citations within the text should be listed in chronological and then alphabetical order (Fretey 2001; Formia *et al.* 2003; Tiwari and Dutton 2006). Please note the format of each type of reference (single, multiple, or two authors) within the text.

The literature cited should include only references cited in the text. Please use the following formats:

An article in a journal:

Weir, C.R., T. Ron, M. Morais, and A.D.C. Duarte. 2007. Nesting and pelagic distribution of marine turtles in Angola, West Africa, 2000–2006: Occurrence, threats and conservation implications. Oryx 41: 224–231.

A book:

Fretey, J. 2001. Biogeography and conservation of marine turtles of the Atlantic Coast of Africa. CMS Technical Series No. 6. UNEP/CMS Secretariat, Bonn, Germany. 429 pp.

A chapter or article in an edited volume:

Brongersma, L.D. 1982. Marine turtles of the Eastern Atlantic ocean. Pp. 407-416. *In*: K.A. Bjorndal (Ed.) Biology and Conservation of Sea Turtles. Smithsonian Institution Press, Washington DC. 583 pp.

Tables/Figures/Illustrations

All figures should be stored as separate files: Excel, .tif or .jpeg format. Please contact the Editors if you do not have access to scanning or other necessary electronic facilities. Tables and figures should be given in Arabic numerals. High resolution images may be requested after acceptance—final files should have a minimum resolution of 1200 px or >250 dpi.

INSTRUCTIONS POUR LES AUTEURS

Le bulletin d'information, African Sea Turtle Newsletter (ASTN) est une publication électronique internationale gratuite et biannuelle qui traite de la biologie et de la conservation des tortues marines en Afrique, de même que des expériences de personnes qui travaillent sur elles dans ce continent si vaste et diversifié, avec ses iles côtières. Cette publication vise à encourager la communication et la collaboration entre tous ceux qui travaillent sur les tortues marines en Afrique—les scientifiques, les écologistes, les politiciens, les directeurs de projets, les membres de communautés diverses, les étudiants, les professeurs, tous! Aussi vise-t-elle à disséminer les nouveautés entre les membres de la communauté internationale qui travaille sur ces espèces.

Nous acceptons des contributions diverses y compris des articles scientifiques, des observations dans la nature, des opinions, des anecdotes, des mythes locaux, des informations d'utilisation dans les pharmacopées, des légendes, des expériences personnelles de terrain, des ateliers, des activités pédagogiques et des annonces d'évènements. Nous accepterons et publierons des contributions en anglais, français, espagnol et portugais pour que tous puissent s'exprimer dans la langue dans laquelle ils sont plus à l'aise.

LES CONTRIBUTIONS

Nous vous invitons à suivre les instructions pour les auteurs et d'envoyer vos contributions au Rédacteur Régional approprié :

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Pays: Soudan, Érythrée, Djibouti, Somalie, Kenya, Tanzanie, Mozambique, Afrique du Sud

Toute contribution devra s'adresser aux rédacteurs régionaux et non pas aux membres du conseil éditorial.

Nous acceptons les contributions en anglais, français, espagnol et portugais pour représenter les quatre langues principales du continent.

Nous réviserons le contenu de même que le format de toute contribution. Chaque contribution devra fournir une adresse d'expéditeur pour chaque auteur de même qu'une adresse de courrier électronique qu'on pourra utiliser pendant la révision de la contribution.

Le Texte

Pour assurer une évaluation rapide de la contribution, nous demandons qu'elle se fasse dans la forme d'un dossier MS Word (ou dossier texte) adjoint à un courrier électronique (email). Si un auteur n'a pas accès au courrier électronique, il devra communiquer avec les rédacteurs pour trouver une autre manière de faire envoyer la contribution. S'il n'y a pas d'internet ou d'ordinateurs disponibles, vous pouvez envoyer une copie papier aux rédacteurs, soit par courrier soit par fax.

Les noms scientifiques doivent être écrits en lettre cursives/italiques (e.g. *Dermochelys coriacea*) et porter le nom latin du genre complet seulement dans sa première apparence dans le texte.

Les notifications dans le texte doivent se faire d'abord dans l'ordre chronologique et après alphabétique (Fretey 2001; Formia *et al.* 2003; Tiwari and Dutton 2006). Nous vous prions de noter le format de chaque style de notification (auteur unique, deux auteurs ou auteurs multiples) dans le texte.

Votre bibliographie devra comprendre seulement la littérature citée dans votre texte, selon les formats suivants:

Un article dans un journal académique:

Weir, C.R., T. Ron, M. Morais, and A.D.C. Duarte. 2007. Nesting and pelagic distribution of marine turtles in Angola, West Africa, 2000–2006: Occurrence, threats and conservation implications. Oryx 41: 224–231.

Un livre:

Fretey, J. 2001. Biogeography and conservation of marine turtles of the Atlantic Coast of Africa. CMS Technical Series No. 6. UNEP/CMS Secretariat, Bonn, Germany. 429 pp.

Un chapitre ou un article dans un volume édité:

Brongersma, L.D. 1982. Marine turtles of the Eastern Atlantic ocean. Pp. 407-416. *In*: K.A. Bjorndal (Ed.) Biology and Conservation of Sea Turtles. Smithsonian Institution Press, Washington DC. 583 pp.

Tables/Chiffres/Illustrations

Toute illustration devra être sauvegardée et présentée dans des fichiers séparés: format Excel, .tif ou .jpeg. Nous vous prions de communiquer avec les rédacteurs si vous n'avez pas un appareil disponible pour copier et sauvegarder électroniquement les images. Les tables et les chiffres devront être écrits en nombres arabes. Nous pourrons vous demander de nous envoyer des images haute résolution même après que votre contribution ait été acceptée—les dossiers définitifs devraient avoir une résolution minimum de 1,200 px ou >250 dpi.

INSTRUÇÕES AOS AUTORES

O Boletim African Sea Turtle Newsletter (ASTN) é uma publicação electrónica internacional bianual, gratuita, sobre a biologia e conservação das tartarugas marinhas em África e das histórias de pessoas que com elas trabalham neste vasto e diversificado continente e suas ilhas. Esta publicação pretende aumentar a comunicação e colaboração entre todos aqueles que trabalham com tartarugas marinhas em África - cientistas, conservacionistas, políticos, gestores de projectos, membros das comunidades, alunos, professores, todos! – assim como compartilhar notícias com a comunidade internacional do ramo.

As contribuições podem variar desde artigos científicos originais e observações sobre história natural a opiniões, histórias, mitos locais, tabus, farmacopeia e lendas, bem como experiências de campo, oficinas, atividades de educação e sensibilização e anúncios. Iremos aceitar e publicar contribuições em Inglês, Francês, Espanhol e Português para que todos se possam expressar na língua em que mais se sentem confortáveis.

SUBMISSÕES

Por favor, siga as instruções aos autores e submeta a sua contribuição para o Editor regional apropriado:

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Lindsey West
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Todas as submissões devem ser enviadas para o Editor responsável pelo país de onde provêem as informações e não para os membros do Conselho Editorial.

As inscrições são bem-vindas em Inglês, Francês, Espanhol e Português para representar as quatro principais línguas do continente.

Todas as submissões serão revistas, em conteúdo e formatação. Um endereço de contacto deve ser dado para cada um dos autores, juntamente com um endereço de e-mail para envio de correspondência durante o processo de revisão.

Texto

Para garantir uma revisão rápida, pedimos que todas as submissões sejam em formato electrónico, na forma de um arquivo do MS Word (ou arquivo de texto) anexado a um e-mail. Se o e-mail não estiver, disponível os autores devem contactar os Editores para se procurar uma alternativa. Se nem internet nem instalações com computadores estiverem disponíveis, uma cópia impressa do artigo pode ser enviada para os Editores por correio ou fax.

Os nomes científicos devem estar em itálico (por exemplo, *Dermochelys coriacea*) e o nome completo em latim dado apenas na primeira aparição.

As citações no texto devem ser listadas em ordem cronológica e, em seguida, ordem alfabética (Fretey 2001; Formia *et al* 2003;. Tiwari and Dutton, 2006). Por favor tenha em atenção o formato de cada tipo de referência (simples, múltipla, ou dois autores) dentro do texto.

A literatura citada deve incluir apenas as referências citadas no texto. Por favor, utilize os seguintes formatos:

Um artigo numa revista científica:

Weir, C.R., T. Ron, M. Morais, and A.D.C. Duarte. 2007. Nesting and pelagic distribution of marine turtles in Angola, West Africa, 2000–2006: Occurrence, threats and conservation implications. Oryx 41: 224–231.

Um livro:

Fretey, J. 2001. Biogeography and conservation of marine turtles of the Atlantic Coast of Africa. CMS Technical Series No. 6. UNEP/CMS Secretariat, Bonn, Germany. 429 pp.

Um capítulo ou artigo num volume editado:

Brongersma, L.D. 1982. Marine turtles of the Eastern Atlantic ocean. Pp. 407-416. *In*: K.A. Bjorndal (Ed.) Biology and Conservation of Sea Turtles. Smithsonian Institution Press, Washington DC. 583 pp.

Tabelas / Figuras / Ilustrações

Todas as figuras devem ser armazenadas como arquivos separados: Excel, formatos .tif ou .jpeg. Por favor, contacte os Editores caso não tenha acesso a digitalização ou outros meios electrónicos necessários. As tabelas e figuras devem ser dadas em algarismos arábicos. Imagens em alta resolução poderão ser solicitadas após a aceitação. Os ficheiros finais devem ter uma resolução mínima de 1200 px ou> 250 dpi.

INSTRUCCIONES PARA LOS AUTORES

El boletín, African Sea Turtle Newsletter (ASTN) es una publicación electrónica internacional gratis y bianual que apunta a divulgar novedades sobre biología y conservación de tortugas marinas en África, en base a experiencias de los investigadores que trabajan con estos reptiles en dicho continente, sus islas y su litoral tan vasto y diverso.

Esta publicación aspira a fomentar la comunicación y la colaboración entre todos que trabajan con las tortugas marinas en África (científicos, conservacionistas, personas políticas, gerentes de proyectos, miembros de comunidades locales, estudiantes, profesores, todos!) Además de compartir las novedades que surjan entre los miembros de la comunidad internacional que trabajan con estas especies.

Se aceptan contribuciones al boletín desde artículos científicos hasta observaciones sobre el mundo natural, opiniones, anécdotas, mitos locales, farmacopea, leyendas, experiencias personales en el "campo", talleres, actividades pedagógicas y anuncios de varios eventos. Se publicarán contribuciones en inglés, francés, español y portugués para que todos puedan expresarse en la lengua más conveniente.

LOS ENVIOS

Por favor siga las instrucciones para los autores y haga su envío al Redactor Regional apropiado:

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Angela Formia
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Países: Costa de Marfil, Guinea Ecuatorial, Gabón, Santo Tomé y Príncipe, Congo-Brazzaville

Lindsey West
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Países: Sudán, Estado de Eritrea, Yibuti, Somalia, Kenia, Tanzania, Mozambique, Sudáfrica

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Libro:

Fretey, J. 2001. Biogeography and conservation of marine turtles of the Atlantic Coast of Africa. CMS Technical Series No. 6. UNEP/CMS Secretariat, Bonn, Germany. 429 pp.

Capítulo o artículo en un volumen redactado:

Brongersma, L.D. 1982. Marine turtles of the Eastern Atlantic ocean. Pp. 407-416. *In*: K.A. Bjorndal (Ed.) Biology and Conservation of Sea Turtles. Smithsonian Institution Press, Washington DC. 583 pp.

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