FRIENDS OF ARABUKO-SOKOKE FOREST

FOREST EXPLOITATION REPORT ARABUKO-SOKOKE FOREST 2018 – 2020

Technical report

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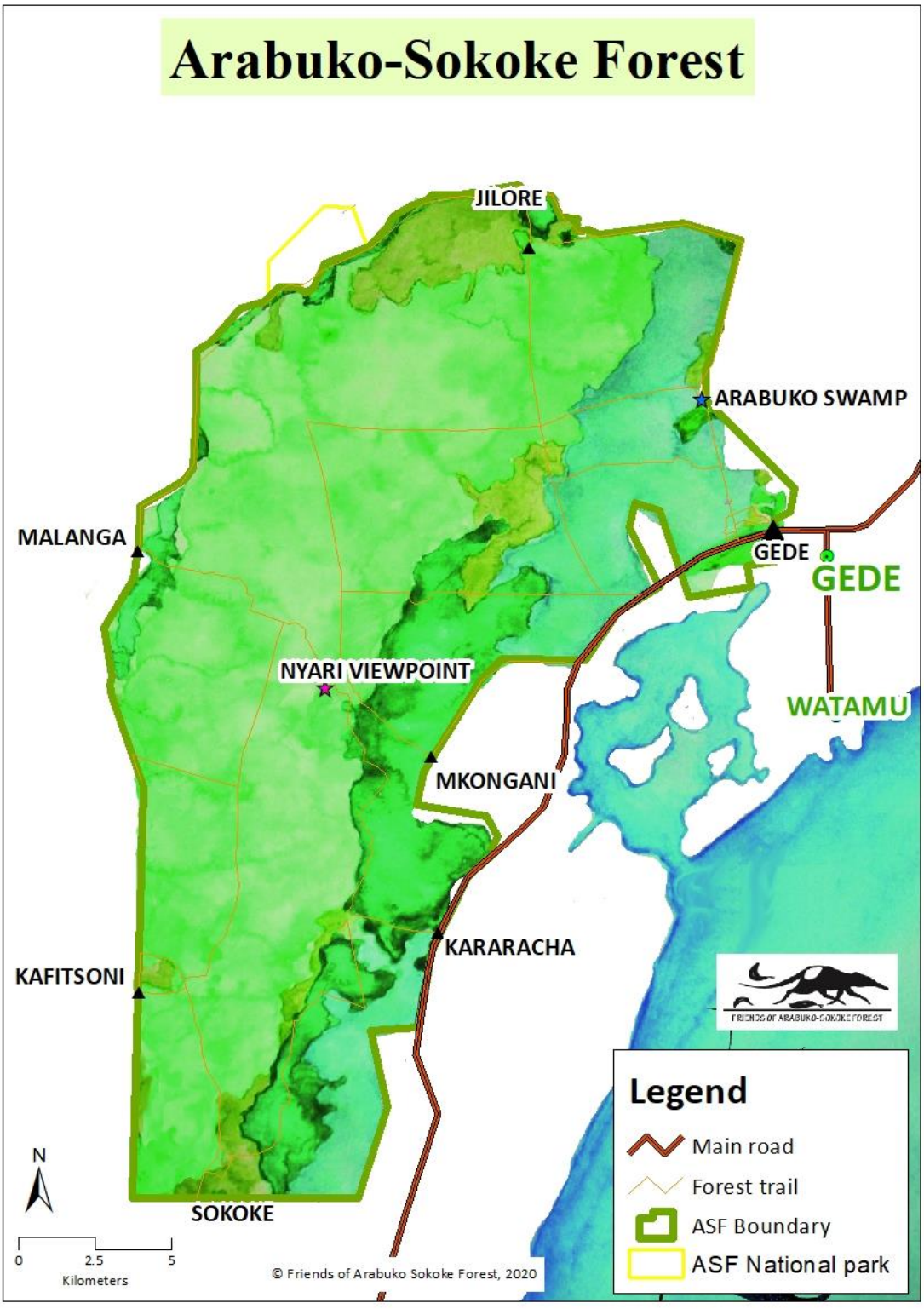

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Executive summary

Arabuko-Sokoke Forest is part of the UNESCO Malindi-Watamu-Arabuko-Sokoke Biosphere Reserve (from 2019) and is also part of the East African Coastal Forest complex that ranks amongst the top 25 global biodiversity hotspots in Africa. Friends of Arabuko-Sokoke Forest (FoASF) started its law enforcement programme in support of the Kenya Forest Service (KFS) in 2017 and in the process, collected data about illegal activities occuring in the forest. Data collected by FoASF is the only available data gathered systematically during law-enforcement patrols in the forest and shows the extent of disturbance of the forest habitat and wildlife populations since April 2018. The report was compiled to present to stakeholders the extent of ongoing unsustainable illegal extraction of natural resources from the forest and to attract the attention of Government authorities, local communities and all stakeholders to the alarming rate of deterioration of the forest. The increase in management effort to patrol and protect the forest has had some positive results, however, this reports show that this effort is not sufficient to effectively protect what is left of the forest and that law-enforcement strategy has to change radically, including training, coordination and to streamline actions of different stakeholders. Overall governance of Arabuko-Sokoke Forest has to be improved, including management mandate and accountability for conservation outcomes. All stakeholders (governmnet or nongovernmental) have to invest significantly in poverty alleviation of communities on the periphery of the forest and build a constituency for conservation locally. Forest management requires increased resources both in Law enforcement efforts as well as in community relations and community development efforts. Unless there is a substantial change in the Arabuko-Sokoke Forest management and protection in near future, the forest will continue to deteriorate and will lose its biodiversity value.

Key findings

1. By extrapolating our results, our data shows 80,4%; 96,4% and 62,5% of the forest was affected by illegal activity in 2018, 2019, and January to June 2020 respectively.
2. Friends of Arabuko-Sokoke Forest scouts, while patrolling with Kenya Forest Service and Kenya Wildlife Service, covered 51%, 56% and 56% of Arabuko-Sokoke Forest in 2018, 2019 and 2020 respectively (total area of the forest is 415km^2)[1]; An average of 27% of the forest was visited by patrol teams only once a year between 2018 and 2020.
3. The average monthly patrol efforts increased by 32% (hours spent in the field) between 2019 and 2020 and by 9% for kilometres patrolled on foot.
4. The average monthly arrest rate increased by 50% between 2019 and 2020.
5. Average monthly rate of woodcutting for extraction of building poles shows an increasing trend of 23 per cent and wood cutting incidents (individual observations of woodcutting, not the actual number of cut wood pieces) of 38 per cent between 2019 and 2020. During the first six months of 2020, 558 building poles were confiscated, indicating (through extrapolation) that a minimum of 1,100 trees might have been cut, representing about 93 trees per month.
6. Charcoal kilns average encounter rate per month increased by 293% between 2019 and 2020. Average monthly rate of log discovery increased by 318% between 2019 and 2020. Logs are used mainly for charcoal production and as firewood. In total 255 logs were observed in 2019 and 217 in 2020 (6 months).
7. Average monthly planks confiscation rate decreased by 56% between 2019 and 2020. Average carving camps monthly presence decreased by 71% between 2019 and 2020. The average firewood collection rate per month increased by 121% between 2019 and 2020.

[1] *Our data does not include data collected by KFS and KWS during their patrols not accompanied by FoASF scouts. Analysis of the coverage and natural resources extraction is based on 500m by 500m quadrants.*

8. Illegal hunting (poaching) is widespread in the forest. Within the first 6 months of 2020, 1,712 snares and traps were removed from ASF and the data shows an average monthly rate increase of 5% between 2019 and 2020.
9. During the surveyed period, no observations of waterbuck (*Kobus ellypsiprimnus*) or Ader's duiker (*Cephalophhus adersi*) were recorded. Waterbuck has not been observed for many years and is probably locally extinct in the forest. There is now strong evidence that the Arabuko-Sokoke population of Ader's duiker is very small, likely to be at risk of disappearance or already locally extinct. Bushbuck was only observed once in 2018 and since no observations were made by our patrol teams and it can be also considered to be at risk of local disappearance.

Background

Arabuko-Sokoke Forest (ASF) covers approximately 420 sq. km and is the largest single block of coastal forest remaining in East Africa. ASF is part of the Malindi-Watamu-Arabuko-Sokoke Biosphere Reserve of MAB – UNESCO (since 2019) and is also part of the East African Coastal Forest complex that ranks amongst the top 25 global biodiversity hotspots in Africa. Within the forest area, there are six globally threatened species of birds: in Africa, the Forest ranks second in importance for the conservation of birds (Collar and Stuart 1985) and is one of the 19 most important Bird Areas in Kenya. The forest hosts 50 plant species which are globally or nationally rare and 3 species of mammals which are globally threatened: the Golden-rumped sengi; the Sokoke bushy-tailed Mongoose and the Ader's Duiker. The forest also supports a population of 150 - 300 elephants and an unknown number of buffalo.

Arabuko-Sokoke Forest is a conservation island, mostly surrounded by an electric fence (with exception of approximately 13 km^2 around the main Gede KFS station and Jilore Station) and surrounded by growing human populations. There are 54 villages that are directly adjacent to the 120 kilometer perimeter of the forest (within <5 km distance). Interventions are generally undertaken in these villages in the five-kilometer buffer area around the forest. The human population at the perimeter of the forest is estimated to be over 150,000 with an average of 4.5 persons per household and a density of 676 and 147 people per km^2 in Kilifi North and Malindi sub-counties respectively. The population consists mostly of small scale subsistence farmers who utilize the forest to support some of their livelihood requirements. Agriculture is the main source of livelihood. Kilifi county is one of the poorest in the country and suffers from among the highest levels of income inequality. It is characterized by high poverty estimated at 71.7% and widespread food insecurity affecting approximately 67% of the households. Current socio-economic status forces communities to continue to rely on natural resource exploitation from the forest.

Friends of Arabuko-Sokoke Forest (FoASF) started to collect data regarding illegal activities and wildlife observations in Arabuko-Sokoke Forest (ASF) in April 2018, working closely with the Kenya Forest Service and Kenya Wildlife Service for its protection.

Threats

Ongoing degradation of the forest resources is prominent and caused by various threats. The strong demographic increase observed in the populations living near ASF leads to the increasing demand for natural resources as well as a pressure on land use. It could also be considered a driver for increasing poverty and the pressure on the quality and efficacy of government service provision. The main threats directly related to demographic pressure are as follows.

Threat	Description
Logging mainly for building poles	Widespread activity with enormous impact on forest undergrowth and regeneration ability. Building poles are used for a wide array of purposes and used in local households or sold by middlemen.
Charcoal production	Charcoal production is one of the main drivers of deforestation and forest degradation undertaken directly by those living around the forest. Charcoal from the forest also probably supplies larger urban areas such as Malindi, Kilifi, and Mombasa.
Wood carving	Illegal woodcarving in the forest targeting an indigenous hardwood *Brachylaena huillensis,* selective harvesting of this wood species has severely declined its population and contributed to degradation of the forest. Wood carving products are sold to both locals and tourists.
Offtake of firewood	For commercial and local use. Community members living around the forest and middlemen are the drivers of this threat.
Bushmeat poaching	Bushmeat poaching of large ungulates, small antelopes, primates, rodents and birds has significantly reduced the wildlife population in the forest. Bushmeat from the forest is both subsistence and commercial.

Methodology

FoASF scouts collect data during field patrols using the Cybertracker (3.0 version) interface. Data are downloaded via SMART (6.2.3) interface and further analysed using Excel and GIS mapping software (ArcMAP). Data collection started in April 2018. The following analysis comprises data from April – December 2018, 2019 and January to June 2020. In March 2019 no data was collected as the whole team was attending ranger training.

In the analytical tables and maps presented below, data is categorized by observations and grouped into five categories according to the main identified threats:

1) Wood exploitation (including cutting trees and branches for construction poles, carving, furniture production, etc.; data includes the total of pieces confiscated, observed or destroyed)
2) Firewood collection (headloads observed/confiscated/destroyed)
3) Charcoal production (including cut logs and wood heaps for charcoal production, kilns and bags; observed, confiscated, destroyed)
4) Carving camps (discovered, destroyed)
5) Snares and traps (destroyed/collected)

Maps showing the observations of selected key mammal species are also presented, as well as a short note on key species.

Maps representations and data about patrol efforts (patrol coverage and density) are calculated based on the analysis of 500m by 500m grid overlayed across the forest area

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Results and discussion

1. Patrol efforts

FoASF scout patrol efforts between April 2018 and June 2020 are summarised in Table 1.

Table 1: Patrol efforts 2018 – June 2020.

Patrol efforts	2018*	2019	2020**	Monthly Average 2018	Monthly Average 2019	Monthly Average 2020	2019 – 2020 percentage change in the monthly average
No of patrol days	341	1053	797	37	96	133	39%
No of hours patrolled	1699	2340	1694	187	213	282	32%
KM on foot covered	2100	3384	2009	230	308	335	9%
No of arrests	22	49	33	2	4	6	50%

**2018 – Only nine months patrolled, starting from April 2018.*
***2020 – Only six months (January to June) included.*

Patrol efforts coverage (km covered on foot) increased between 2019 and 2020 by an average of 9%, and over 30% more time was spent in the field observing activities in the forest. This already directly resulted in an average monthly 50% increase in arrests for only the first 6 months of 2020 in comparison with the whole year 2019.

Table 2: Patrol coverage of the forest by year.

Patrol coverage	2018 (km^2)	2018%	2019 (km^2)	2019%	2020 (km^2)	2020%
Not patrolled	205.4	49%	181.3	44%	183.6	44%
Patrolled 1*	109.9	26%	114.0	27%	116.5	28%
Patrolled 2**	67.4	16%	94.8	23%	79.8	19%
Patrolled >2***	32.5	8%	25.0	6%	35.2	8%

**Area was visited once by patrol teams.*
*** Area was visited twice by patrol teams.*
****Area visited more than twice by patrol teams.*

The analysis of patrol coverage and density based on 500m by 500m grid shows that between 44 – 49% of the forest (total area of the forest is 415,1km^2) was never patrolled by FoASF teams and close to 30% was patrolled only once during any year. Area with >2 visits mostly corresponds to main forest roads. Human resources of FoASF are limited and scouts are deployed only to areas targeted by identified crimes, based on information or to perform reconnaissance patrols in key areas.

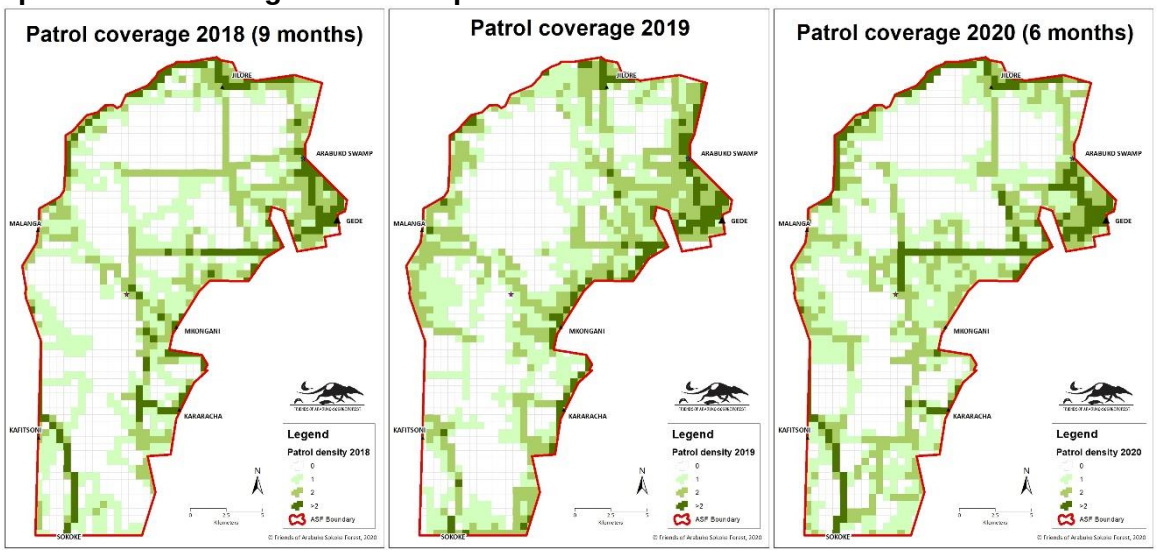
Table 3: Forest area affected by illegal activities.

	2018	2019	2020
Patrolled (km^2)[2]	209.7	233.8	231.5
Forest area patrolled	51%	56%	56%
Affected (km^2)	86.1	126.7	81.8
Per cent patrolled affected	41%	54%	35%
Non patrolled (km^2)	205.4	181.3	183.6
ASF per cent affected (extrapolation)	80.4	96.4	62.5

[2] *as per system of 500m^2 quadrants*

This data shows, that on average 54% of Arabuko-Sokoke Forest is patrolled per year (visited at least once, based on 500m by 500m grid) and from these patrolled areas 44% are affected by illegal activities. By extrapolating our results, our data shows 80,4%; 96,4% and 62,5% of ASF was affected by illegal activity in 2018, 2019, and January to June 2020 respectively. The conservation outcome of law-enforcement activities carried out in the forest is limited and a new law-enforcement strategy has to be developed and implemented.

Map 1: Patrol coverage between April 2018 and June 2020.



**white (no colour) corresponds to areas never visited by patrol teams, light green corresponds to areas visited once per year, medium green areas visited twice per year and dark green areas visited more than twice per year (these areas represents mainly roads).*

2. Woodcutting

Table 4: Observation of cut stems and confiscation of building poles, planks and logs.

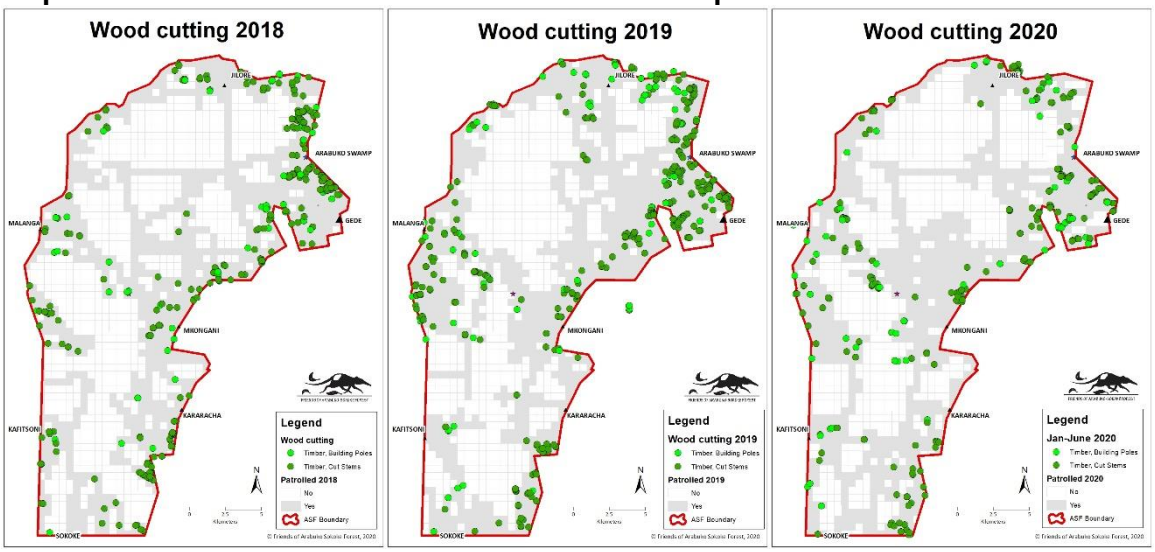
Wood cutting	2018	2019	2020	Average/ month 2018	Average/ month 2019	Average/ month 2020	Percentage change in the monthly average 2019 - 2020
Cut stems* (number pieces)	691	822	450	75	75	75	0%
Building poles ** (number pieces)	209	685	558	23	62	93	50%
Cut stems* (number incidents)	359	472	261	38	43	44	1%
Building poles (number incidents)**	64	114	86	7	10	14	38%
Planks (number of incidents)	31	20	4	3	2	1	-56%

**includes observation of cut stems of any size, excluding large trees/logs cut for carving, firewood and charcoal production.*
***includes cut poles observed, confiscated, or destroyed, excluding large trees/logs cut for carving, firewood and charcoal production.*

Data collected during patrols do not indicate an increase in the number of cut stems between 2019 and 2020. But there was an increase of 50% in observations of the average monthly number of building poles (seized). This is supported by the analysis of wood cutting incidents (individual observations of woodcutting, not the actual number of cut wood pieces) as there is a 38% increase in the average number of building poles incidents per month. During 6 months of 2020, 558 building poles were observed or confiscated. By extrapolating, our data are indicating offtake of minimum 1000 trees during first 6 months of 2020 (only for building poles extraction) plus additional offtake for charcoal production, firewood, furniture or carving.

Average monthly decrease in planks confiscation incidents of 56% was also observed, only 17 planks were confiscated in 2020 compared to 48 in 2019 and 95 in 2018.

Map 2: Observations of wood extraction between April 2018 and June 2020.



**Light green dots represent timber extraction for building poles; Dark green dots represent observation of cut stems; Yellow dots represents observation of logs and dark purple dots confiscation of planks. Grey areas represent areas visited by FoASF patrol team during the year.*

3. Charcoal production

Table 5: Charcoal production.

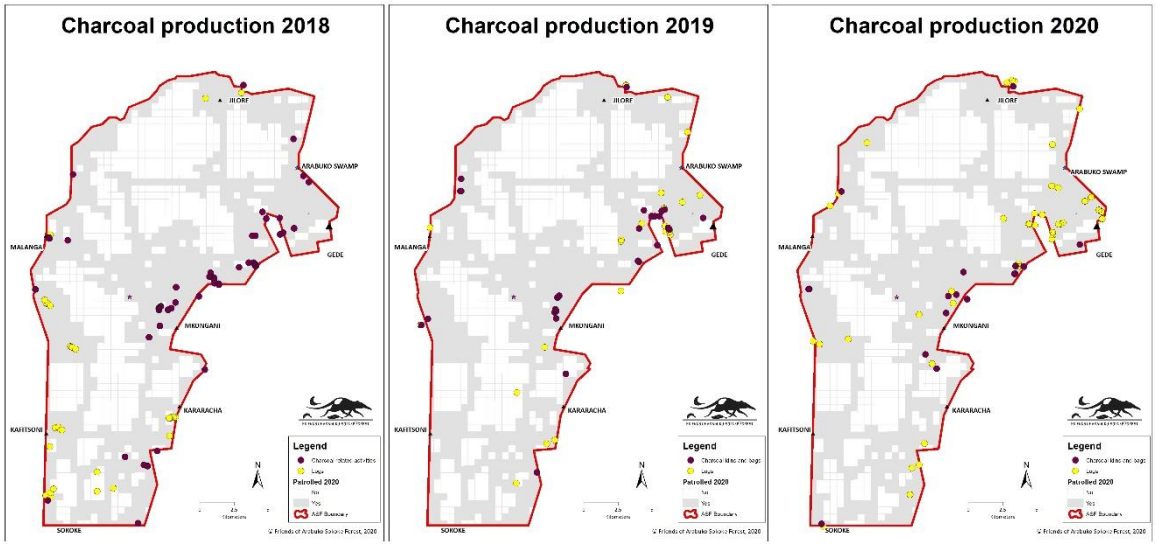
	2018	2019	2020	Average/month 2018	Average/month 2019	Average/month 2020	Percentage change in the monthly average 2019 - 2020
Charcoal kilns (number of incidents)		14	25		1,3	5	293%
Logs* (number of incidents)	43	28	53	4	2	9	318%

**includes logs for diverse use, mainly for charcoal production, but also firewood and more rarely carving use.*

Data collected in 2018 used different format and kilns, bags and charcoal logs and piles of wood were collected as one observation within 75 incidents.

Charcoal kilns average encounter rate per month increased by 293% between 2019 and 2020. Additionally, 55 charcoal bags were confiscated in 2019 and nine bags in 2020. We also observed 318% increase in average monthly incidents of logs observations – these are usually used as charcoal production or as firewood, sometimes for carving. In total 105 pieces of logs were observed in 2018, 568 pieces in 2019 and 217 in 2020 (six months). Additionally, an increase of 318% in average observation of logs was observed between 2019 and 2020. Logs are used mainly for charcoal production, firewood or sometimes carving. Increase in logs observations indicate that the wood is taken out of the forest and charcoal production with forest wood is ongoing outside of the forest boundary.

Map 3: Observations of charcoal production related activities between April 2018 and June 2020



**Dark dots represent observation of charcoal production or related observations (kilns, bags, logs); Yellow dots represents observed logs with use for charcoal production or as firewood. Grey areas represent areas visited by FoASF patrol team during the year.*

4. Wood carving

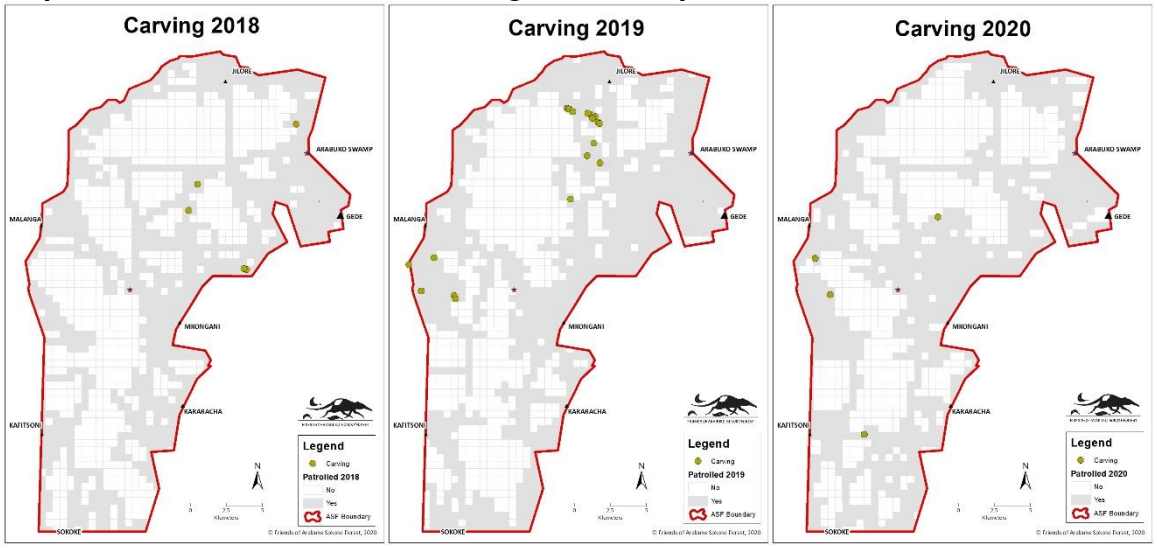
Table 6: Wood carving.

	2018	2019	2020	Average/month 2018	Average/month 2019	Average/month 2020	Percentage change in the monthly average 2019 - 2020
Carving camps	5	16	4	2,5	2,3	0,7	-71%

Data indicates a decrease of 71% in average carving camps observations per month between 2019 and 2020. But it has to be noted that some areas of ASF where wood carving camps were installed in 2019 have yet to be visited in 2020 due to limited human resources.

The decrease in carving camp observations may be due to increased patrol efforts combined with the significant decrease in market demand for carved items due to Covid-19 tourism crash.

Map 4: Observations of wood carving between April 2018 and June 2020.



**Dots represent observation of carving camps. Grey areas represent areas visited by FoASF patrol team during the year.*

5. Firewood collection

Table 6: Firewood collection.

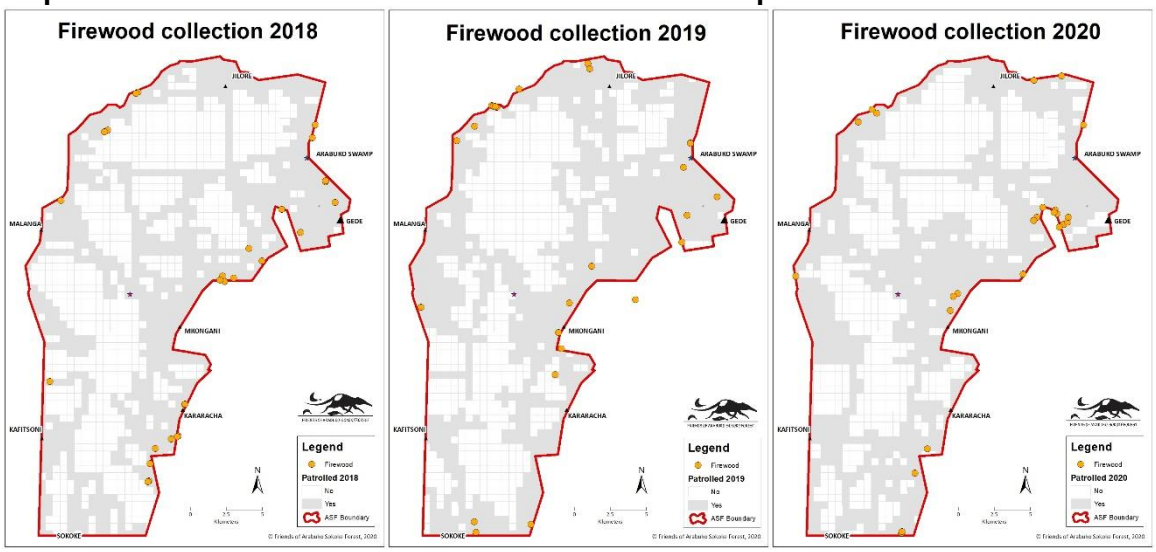
	2018	2019	2020	Average/ month 2018	Average/ month 2019	Average/ month 2020	Percentage change in the monthly average 2019 - 2020
Firewood headloads	31	44	54	3	4	9	121%

Following the firewood collection ban introduced by KFS in October 2018 (due to heavy over utilisation and commercialisation of firewood from ASF) and generally low incidence in 2018 and 2019, the average firewood collection rate per month (number of incidents) increased by 121% between 2019 and 2020. Firewood collections was mainly localised at the periphery of Arabuko-Sokoke Forest.

Formal exploitation of firewood through Community Forest Association (CFA) participation was progressively degrading the forest as CFAs made KES 1,140,000 per year through KES 20 levy per head-load of firewood sold to communities.This translates to 5,700 metric tonnes of firewood exploited from the forest annually. These levels of exploitation were un-sustainable (Ochieng et al. 2017).

Forest adjacent villages are dependent on firewood from the forest for energy consumption when their farmland does not provide (Busck-Lumhold and Treue 2018), but dead wood plays an important role in the forest ecosystem. Before it has completely decayed, a dead tree will play a role in the ecosystem for probably three or four times longer than it did when it was alive.

Map 5: Observations of firewood collection between April 2018 and June 2020.



**Dots represent observation of firewood collection. Grey areas represent areas visited by FoASF patrol team during the year.*

6. Illegal hunting

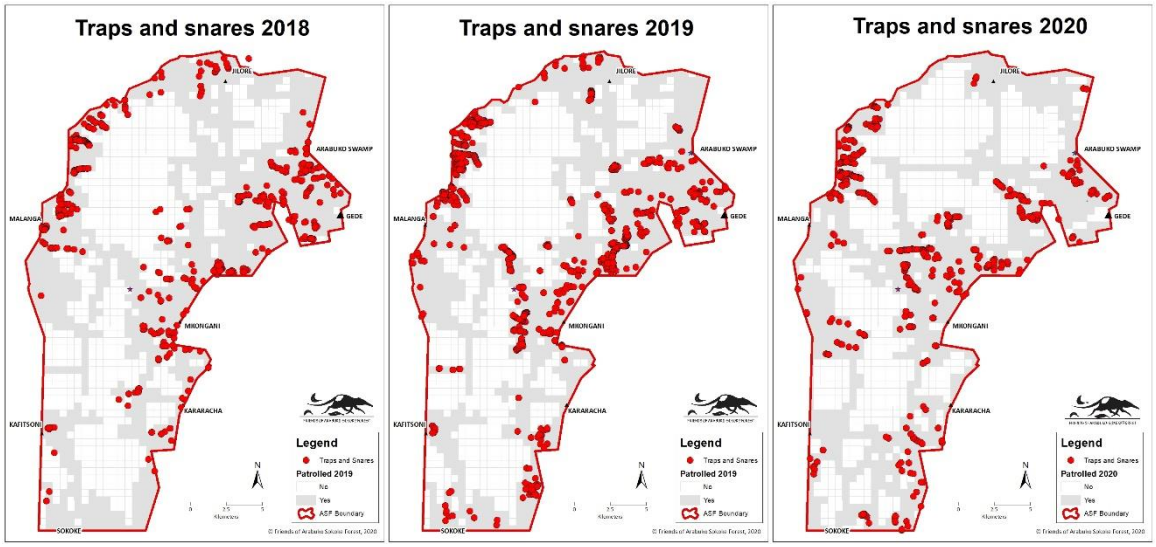
Table 7: Illegal hunting.

Poaching	2018	2019	2020	Average/month 2018	Average/month 2019	Average/month 2020	Percentage change in the monthly average 2019 - 2020
Snares and traps	812	2576	1712	89	234	245	5%

Snares are cheaply constructed and easy to set but can be difficult to detect and are highly damaging to vertebrate populations due to their indiscriminate and wasteful nature (Gray et al. 2017). Within the first six months of 2020, 1,712 snares and traps were removed from ASF and the data shows an average monthly increase of 5% between 2019 and 2020. But also 62% increase between 2018 and 2019.

Illegal hunting is widespread in Arabuko-Sokoke Forest and constitutes the greatest current threat to the ASF's vertebrates and has resulted in it losing its former vertebrate diversity and abundance. The general lack of wildlife species observed in the forest indicates a high level of pressure on mammal species populations in Arabuko-Sokoke Forest.

Map 6: Observations of illegal hunting between April 2018 and June 2020.



**Dots represent observation of snares and traps. Grey areas represent areas visited by FoASF patrol team during the year.*

7. Other illegal activities

During our patrols, other illegal activities were observed, namely cut branches (for construction or charcoal production), fitoes (small sticks for building) or other human presence indicating illegal passage in the forest (direct and indirect signs). These activities follow a pattern of other illegal activities carried out in the forest.

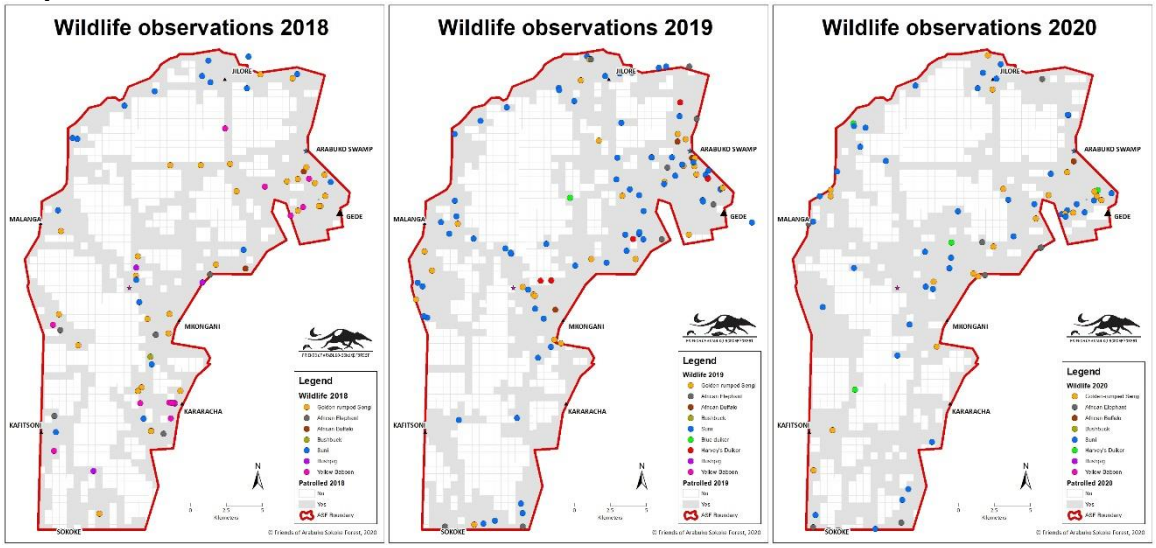
8. Wildlife species

Tab 8: Selected wildlife species observations.

Wildlife	2018	2019	2020
Golden-rumped Sengi	32	25	20
Elephant	5	8	11
Buffalo	2	3	1
Bushbuck	1	0	0
Suni	18	63	21
Duiker*	0	6	2
Bushpig	4	1	36
Yellow baboon	13	0	0

*four duiker species (Common duiker - *Silvicapra grimmia*; Blue duiker - *Cephalophus monticola*; Red duiker - *Cephalophus natalensis* and Harvey's duiker - *Cephalophus harveyi*) are grouped together as "duiker", as duiker species confusion may easily occur during observations by field teams.

Map 7: Direct wildlife observations between 2018 and 2020.



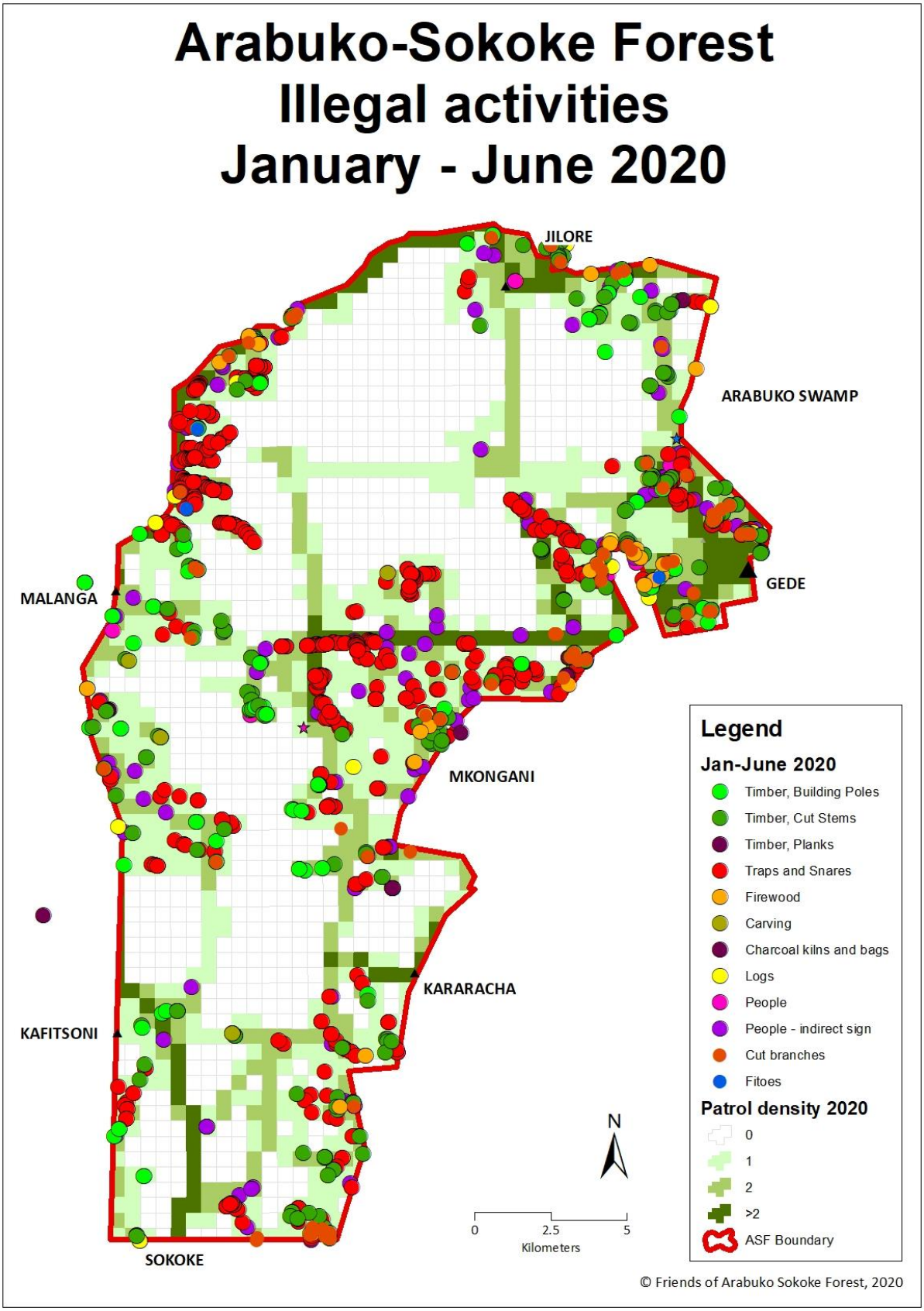
**Dots represents:* Orange:Golden-rumped senghi; Grey:African elephant; Brown:African buffalo; Green:Bushbuck; Blue:Suni; Purple:Bushpig; Pink:Yellow baboon
Grey areas represent areas visited by FoASF patrol team during the year.

Ader's duiker population was traditionally harvested for medicinal use. Sources from the adjacent community confirmed that its presence in the forest is rare or non-existent today. No Ader's duiker was observed by our scouts since 2018. During the study done by Stokes H, Ogwoka B, Bett J, Wacher T, Amin R (2016) Ader's duiker was captured only once (one individual) in 2015. There is now strong evidence that the Arabuko-Sokoke population of Ader's duiker is very small, likely to be at risk of disappearance (Ochieng et al. 2017) or already locally extinct. Its population status can only be confirmed by targeted studies.

Bushbuck (*Tragelahus scriptus*) was only observed once in 2018 and since no observations was made by our patrol teams. Bushbuck is probably also at risk of disappearance. During the surveyed period, no hippopotamus (*Hippopotamus amphibious*) or waterbuck (*Kobus ellypsiprimnus*) was recorded, although these 2 species used to be present in the past. Although observations of Golden-rumped sengi (*Rhynchocyon chrysopygus*) keeps the same trend since 2018, species are directly threatened by snaring in Arabuko-Sokoke Forest. The wildlife snaring crisis is an insidious and pervasive threat to biodiversity in Arabuko-Sokoke Forest and is driving ASF species to extinction.

Our data does not report on birdlife observations, although certain key bird species are observed during patrols and sometimes released from snares and traps.

Map 8: All illegal activities recorded between January and June 2020.



Conclusion: Disappearing biodiversity hotspot

The pattern emerging from different research on forest condition and causes of forest degradation are somewhat bewildering. The biodiversity of Arabuko-Sokoke Forest (ASF) is high, but the forest has not been systematically monitored or documented which makes it difficult to establish a historical overview (Busck-Lumhold and Treue 2018, Ochieng et al. 2017). Two disturbance reports were published (2006 and 2015, Jackson, Kirao and Clarance 2018) and other data collected between 2008 and 2017 indicate, that no area in the forest is left undisturbed. The same was confirmed by our data that indicates that 90.4% of the forest area might have been affected in 2019 by illegal activities. While forest cover has remained stable, there is evidence of persistent selective logging and wood extraction with subsequent reduction of habitat quality and a steady decline in biodiversity (Nzau et al., 2020). The absence of evidence on the forest's conservation status and ambiguous arguments on whether there are reasons for concern are apparent. Hence the extent, severity or even reality of forest degradation, underlying cause-effect relations, and thus what to do about it is kept open to endless speculations and contestations (Busck-Lumhold and Treue 2018).

Reliable time series of biophysical data are the only reliable method to generate evidence-based conclusions about conservation outcomes. The forest area is not increasing, and its productive capacity is hardly increasing either (Busck-Lumhold and Treue 2018). Successive wood over-harvesting results in changes in species composition and size classes (Ndegwa, Nehren, Anhuf, and Iiyma 2018), many deadwood-dependent insects, mosses, and fungi use it as a habitat and birds, amphibians, and bats greatly benefit from this (Sandström et al. 2019). Veteran and dead trees at different stages of decay are indicators of sustainable management (Radu 2006).

Mean annual increment in Arabuko-Sokoke Forest is not known and it is disputable that the current wood offtake is sustainable and that it can be replaced by natural regeneration. A more detailed study on natural regeneration rates in ASF is required to better evaluate the sustainability (or lack thereof) of current wood offtake and estimating sustainable harvesting levels of different wood categories. If wood harvesting could be stopped, it would probably take several decades for the forest to recover to the desirable stocking level and former biodiversity status. In the past, the involvement of local people in resource assessment led to the mutually agreed upon conclusion that the forest needs to be given at least 25 years to regenerate (Matiku et al. 2013). By recognizing the threats posed by timber extraction (live and deadwood), forest management strategies should be developed for protecting and maintaining the diversity of species in Arabuko-Sokoke Forest.

Wildlife populations, if species are still present, are faster to recover, but in the case of species at local extinction-level such as Ader's duiker, bushbuck and waterbuck, it might take significantly longer to recover or require other management strategies to be implemented.

Recent studies agree that the coastal dry forests of East Africa are deteriorating and thus in critical need of conservation and restoration efforts (MacFarlane et al. 2015; Ndang'ang'a 2016, Busck-Lumhold and Treue 2018). As of late 2019, the Birdlife International Partnership has identified Arabuko-Sokoke Forest as an Important Bird and Biodiversity Areas (IBAs) in danger. The forest is considered to be under very high pressure in recent years and in need of immediate action (Birdlife International, 2020). Results of several recent studies support rather alarming state of the forest natural resources and weak governance structures with unclear responsibilities.

Recommendations

- Radically change law-enforcement strategy, include training, coordination and to streamline actions of different stakeholders. Evaluate regurarly conservation outcome and adapt accordingly.
- Invest significantly in poverty alleviation in periphery communities and build a constituency for conservation locally.
- Streamline governance of Arabuko-Sokoke Forest, including management mandate and accountability for conservation outcomes.
- Develop 5-year ASF management plan with clear and consistent management strategy and expected conservation outcome, including financial aspect of its implementation. Invite partners to implement.
- Develop Participatory Forest Management plan, including business plan for livelihood startegies and communicate clearly and honestly to the local people of PFM definition and avoid exaggerating and void promises.
- Study natural regenerations rates in ASF to better evaluate the sustainability (or lack therof) of current offtake and estimate sustainable harvesting levels of different wood categories.
- Develop and implement regulations for extraction of forest products, taking in account their current status while ensuring the forest resources have adequate time to regenerate and extraction does not damage the forest.
- Develop and implement a regular systematic survey of key wildlife species, monitor trends and conservation outcomes.
- Ensure, that donor organisations invest into implementation of ASF management plan and PFM Business plan.
- Increase local, national and international awareness of the uniqueness of biodiversity in Arabuko-Sokoke Forest, and its ecosystem services.
- Increase minimum penalties for illegal forest exploitation offenses, and work with prosecutors towards better understanding of impact illegal exploitation of forest resources has on forest biodiversity.

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Annex: Examples of illegal activities recorded in 2020.

1. Logging


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2. Charcoal production














3. Wood carving





4. Offtake of firewood

5. Bushmeat poaching