IUCN Conservation Outlook Assessment 2017 **(archived)**
Finalised on 08 November 2017

Please note: this is an archived Conservation Outlook Assessment for Selous Game Reserve. To access the most up-to-date Conservation Outlook Assessment for this site, please visit https://www.worldheritageoutlook.iucn.org.

Selous Game Reserve

SITE INFORMATION

Country:
Tanzania (United Republic of)
Inscribed in: 1982
Criteria:
(ix) (x)

Site description:
Large numbers of elephants, black rhinoceroses, cheetahs, giraffes, hippopotamuses and crocodiles live in this immense sanctuary, which measures 50,000 km2and is relatively undisturbed by human impact. The park has a variety of vegetation zones, ranging from dense thickets to open wooded grasslands. © UNESCO

SUMMARY

2017 Conservation Outlook

Critical

It is important to emphasize that the Selous Game Reserve continues to be a globally important protected area with an enormous surface area of largely intact habitat free of major infrastructure. There are reasons for cautious optimism as this privileged situation in principle offers the possibility of the recovery of the property after a massive poaching crisis. Unfortunately and despite laudable efforts and signs of increasing effectiveness of a response to poaching, the current situation remains critical with the populations of major keystone and flagship species under massive pressure from poaching for ivory and horn. Parallel to the signs of an increasingly effective management response and important external support to them, the Mkuju River uranium mine, the sobering legal possibility to explore and extract oil, gas and uranium since 2009, lack of clarity in terms of industry access to other minerals within the property in contradiction with the Tanzania Wildlife Act cast shadows on the future of the Selous Game Reserve. Arguably the main concerns are (i) the conceptual dilemma of a vast resource-rich protected area, which is on its way to become a (large) island within a broader ecosystem under increasingly intense use by local communities and for commercial activities and (ii) the ongoing political commitment to the construction of two large dams which will inevitably affect the property. In particular the proposed Stiegler’s Gorge Dam, located in the heart of the property on its main watercourse, the Rufiji River, would change the property forever.

Current state and trend of VALUES

Critical
Trend: Deteriorating

The vast wilderness area remains largely unchanged as such besides a quantitatively negligible excision in 2012. Nevertheless, important conservation values of the property are being eroded through extreme levels of poaching of

keystone wildlife species, and mounting pressures for exploitation of water and mineral resources. The limited animal census data available suggest a significant decline in elephant populations with only 13,000 elephants left and 95-98 percent loss of black rhino since World Heritage inscription. This constitutes a critical concern even though the ongoing availability of vast tracts of intact habitat gives reason for cautious optimism provided the political willingness and the provision of conditions enabling the effective management of the property.

Overall THREATS

Very High Threat

The fact that the World Heritage Committee decided to inscribe the Selous Game Reserve on the List of World Heritage in Danger leaves no room for interpretation in terms of severe and acute challenges. The poaching crisis was a main trigger of the decision. Despite laudable efforts and international support, a coherent long term response is pending. While the Mkuju River uranium mining was formally accepted by the World Heritage as an “exceptional and unique case”, the main question marks in terms of status, extraction method, baselines and impact monitoring remain. Moreover, it is concerning that changes to conservation legislation in principle permit the exploration for and extraction of oil, gas and uranium elsewhere in the property. Despite the tight restriction to selected resources, publicly available cadastres suggest that the possibility of exploration for and extraction of other minerals is not off the table either. If constructed, the two large dam projects known as Kidunda and Stiegler’s Gorge, respectively, would affect the property in many direct and indirect ways. Both in terms of scale and location, the proposed Stiegler’s Gorge is arguably the most significant overall concern about the future of the property.

Overall PROTECTION and MANAGEMENT

Serious Concern

Management is severely constrained by limited funding and staffing, but also legal changes which permit activities which are in direct contradiction of basic conservation objectives. The poaching crises showed a limited capacity to respond to increasing pressures. The limited and slow response to important World Heritage Committee requests and recommendations is another indication of the very limited overall effectiveness of protection and management.

FULL ASSESSMENT

Description of values

Values

World Heritage values

▶ **Globally significant populations of large mammals**
Criterion:(x)

The Selous ecosystem, at the time of World Heritage inscription, supported some of the most impressive remaining populations of Africa's iconic mega-fauna, including more than 100,000 elephants, 200,000 buffalo, 2,000 black rhino, 18,000 hippopotamus and a healthy population of wild dog (UNEP-WCMC, 2011; World Heritage Committee, 2010). Approximately 750,000 specimen of 57 large mammals species were recorded in 1986 (World Heritage Committee, 2010). It is important to understand that these huge numbers of large mammals, including many herbivores, have been shaping and continue to shape the landscape with which they have co-evolved at a scale and degree of naturalness that has disappeared across most of the planet.

▶ **Rare, endemic and endangered species**
Criterion:(x)

There are globally significant populations of numerous rare and endangered mammals and birds. In all likelihood the same holds true for many other taxa, for which information is still scarce. Charismatic species include the African elephant (Loxodonta africana, VU), cheetah (Acinonyx jubatus, VU) and lion (Panthera leo, VU), hippopotamus (Hippopotamus amphibius, VU), African wild dog (Lycaon pictus, EN), Sanje crested mangabey (Cercocebus sanjei, EN), Udzungwa red colobus monkey (Piliocolobus gordonorum, EN),

and a small number of black rhino (Diceros bicornis, CR). The birds include the globally vulnerable wattled crane (Bugeranus carunculatus, VU) and rufous-winged sunbird (Cinnyris rufipennis, VU), as well as the endemic Udzungwa forest-partridge (Xenoperdix udzungwensis, EN).

► Diversity of vegetation types

Criteria:(ix)(x)

Far from being homogeneous, the property boasts a stunning diversity of vegetation types reflecting variations in altitude (80-1,300 m.a.s.l.), soils, rainfall, seasonal flooding patterns and other abiotic factors. The vegetation is predominantly comprised of deciduous miombo woodland, punctuated with seasonally flooded sand rivers, interspersed with rocky Acacia-clad hills, forests and swamps. The northern SGR is more open wooded grassland with floodplain swamps and tracts of borassus palms (Borassus aethiopium) and doum palms (Hyphaene thebaica) (World Heritage Committee, 2010).

► Large, roadless and mostly undisturbed wilderness area largely free of infrastructure

Criteria:(ix)(x)

Exceeding the size of Switzerland, the Selous Game Reserve (SGR) is one of the largest mostly undisturbed wilderness areas in Africa at more than 5 million hectares (World Heritage Committee, 2010). The site is free of human settlement, roads and other infrastructure and consumptive use other than trophy hunting. SGR is embedded in a much larger landscape sometimes referred to as the Wider Selous Ecosystem. Along with adjoining protected areas and community Wildlife Management Areas (WMAs) in southern Tanzania the Wider Selous Ecosystem forms a massive conservation landscape (Jaeger et al. 2013). The Wider Selous Ecosystem permits on-going ecological and biological processes at a unusually large scale. The likewise vast Niassa Game Reserve (4.2 million hectares) in northern Mozambique is ecologically linked and there are on-going management and conservation efforts the across the international border, including specific projects and commitments dedicated to the Selous-Niassa Corridor as detailed in the three most recent reactive monitoring mission reports. Besides the intrinsic values, SGR can serve as a rare scientific reference area to understand large-

scale landscapes with a high degree of naturalness.

▶ **Sand rivers and associated floodplains**
Criterion:(ix)

The network of seasonally dry rivers that exist as dry sandy river beds for most of the year and become raging torrents during the seasonal rains, often flooding their banks, are a special feature of the Selous landscape (World Heritage Committee, 2010). They represent an outstanding example of this ever-changing ecological process, most prominently represented by the mighty and extremely dynamic Rufiji River.

Other important biodiversity values

▶ **Freshwater biodiversity**

The rivers, creeks, wetlands and lakes harbor a rich freshwater biodiversity, which has not attracted adequate attention or scientific work. Undoubtedly, many of the secrets of the freshwater systems remain to be discovered.

Assessment information

Threats

Current Threats
Very High Threat

As can be expected in a property on the List of World Heritage in Danger, the current threats to the property are very severe. A stunningly high proportion of elephants was poached for ivory as part of large-scale scheme which can only be described as international organized crime. The fate of black rhino is even bleaker. The fact that the habitat remains largely intact gives reason for cautious optimism, further fueled by the successful recovery after an earlier poaching crisis. However, this would require a massive, coherent and

permanent investment and management effort, which has so far materialized only partially. Further threats stem from commercial trophy hunting, unless adequate management and independent scrutiny are in place. The Mkuju River uranium mining project was formally accepted by the World Heritage Committee as an “exceptional and unique case”. Nevertheless, fundamental questions in terms of status, extraction method, baselines and impact monitoring remain.

► Roads/ Railroads

Low Threat
Inside site

The main TAZARA railway line, linking Dar es Salaam with Lusaka, passes through the northern part of SGR.

► Tourism/ Recreation Areas

Low Threat
Inside site, localised(<5%)
Outside site

Non-consumptive nature-based tourism occurs only in a small part of the northern sector of the property. Only a small number of camps and lodges operate in the vast reserve (IUCN and UNESCO, 2008). Thereby, the impacts of tourism other than trophy hunting are negligible. At the same time, it can be argued that the potential benefits associated with tourism, such as contributions to conservation financing, generation of local jobs and income, as well as visitor education are underutilized. While one challenge would be direct competition with the renowned wildlife viewing destinations elsewhere in Tanzania and East Africa (IUCN, 2017), it also needs to be considered that the zone allocated to tourism would be directly affected by possible dam construction on the Rufiji River (IUCN and UNESCO, 2013). Nevertheless, there are important opportunities for non-consumptive tourism in and around the game reserve, which deserve to be analyzed.

► Invasive Non-Native/ Alien Species

Data Deficient
Inside site, extent of threat not known
Outside site

The spread of invasive alien plants is reported to be accelerating, including

Giant Sensitive Plant (Mimosa pigra), the invasive weed Lantana camara and the floating aquatic plant, Pistia stratiotes (UNESCO, 2011). Red Water Fern (Azolla filiculoides) in the Rufiji River and in several lakes (IUCN and UNESCO. 2013). The most recent reactive monitoring report mentions efforts to reduce the risk of invasions posed by road access and vehicles in the mine and efforts to train rangers in the detection of invasive alien plants (IUCN, 2017).

► Mining/ Quarrying

High Threat
Inside site, extent of threat not known
Outside site

In 2012 the World Heritage Committee, in an exceptional and unique case, accepted a minor boundary modification of the property to excise ca. 40,000 ha from the property to facilitate uranium mining (World Heritage Committee, 2012). At the national level, the boundaries of the game reserve remained unchanged. While no active uranium mining appears to occur to this day, preparation work and testing has been ongoing. The main concerns center around the exact status of operations, limited in-country institutional and technical capacity considering that there is no previous experience with uranium mining in Tanzania, possibly inadequate baseline studies likely to compromise future monitoring, lack of clarity in terms of extraction methods to be applied and, consequently, a lack of clarity in terms of applicable impact assessments. According to the latest reactive monitoring mission report, operator Mantra-Tanzania Limited is currently testing the feasibility and suitability of so-called in-situ leaching, which fundamentally differs from the originally envisaged open-pit approach (IUCN, 2017; see also IUCN and UNESCO, 2013). In light of “several uncertainties” (IUCN, 2017), the project will require permanent attention of the authorities, including but not limited to the game reserve.

► Tourism/ Recreation Areas

High Threat
Inside site, extent of threat not known

The majority of the SGR south of the Rufiji River is managed for commercial sport hunting, 44 of the 47 management blocks are allocated as hunting concessions with three for non-consumptive tourism (Republic of Tanzania, 2005). While commercial trophy hunting is controversial, it is also a

substantial contributor to financing the property's management. The legally established retention scheme stipulates re-investment of 50 percent of the revenues from tourism and hunting in game reserves in conservation and management (United Republic of Tanzania, 2009). IUCN (2017) report that more than 70 percent of the revenue of the Tanzania Wildlife Authority (TAWA) is derived from trophy hunting in game reserves and game controlled areas, while noting that corresponding revenues are used exclusively for operational expenses. Further benefits of trophy hunting in the property have been suggested, including but not limited to the development of management infrastructure, patrolling of hunting blocks, provision of information on wildlife and human activities (IUCN and UNESCO, 2008). The three most recent reactive monitoring missions coincide in the conclusion that trophy hunting can have a legitimate role provided full transparency, re-investment of revenues in conservation, compliance with sustainable use principles and scientifically sound and independently set quotas and age limits. The authors express some doubts about the compliance with such principles, fueled for example by a temporary suspension of the retention scheme (IUCN, 2017; IUCN and UNESCO, 2013; IUCN and UNESCO, 2008). IUCN (2017) referred to the future and current retention as "unclear" while also noting the risks related to the high degree of reliance on trophy hunting revenues, when the sector is coming under increasing societal scrutiny.

► Hunting (commercial/subsistence)

Very High Threat
Inside site, throughout(>50%)
Outside site

Unlike in many parts of the world where habitat conversion and degradation drive species declines, the vast property continues to boast intact habitat for the complete array of large populations of mammals. However, commercial poaching for ivory and rhino horn has been strongly affecting target species in several waves (TEPS, 2013; UNEP et al., 2013). African elephant and black rhino numbers dramatically dropped in the 1980s (World Heritage Committee, 2010, Borner et al., 1986). The subsequent recovery of elephant numbers in response to massive management efforts demonstrated the resilience of a vast and still largely intact ecosystem (Baldus et al., 2000). However, the encouraging experience has since been overshadowed by a major poaching crisis which triggered the inscription of the property on the

List of World Heritage in Danger (World Heritage Committee, 2014). The most recent reactive monitoring mission acknowledged “considerable progress” in terms of responding to the crisis, singling out the establishment of the Tanzania Wildlife Authority (TAWA), active and planned international cooperation, bilateral dialogue with Mozambique on the Selous-Niassa corridor and Wildlife Management Areas (WMAs) surrounding the property (IUCN, 2017). The report, however, also notes that “further progress is required until the property is at a point of recovery that it could be removed from the List of World Heritage in Danger”.

Potential Threats

Very High Threat

Following a recent revision of the Wildlife Act there is a legal option to extract oil, gas and minerals, which raises important concerns, as epitomized by the existing Mkuju River uranium mining project. Moreover, despite the restriction to the above exceptions, publicly available mining cadastres suggest the ongoing existence of an option to grant exploration licenses for a wide range of minerals. The other main area of concern is the possible construction of two large dams known as Kidunda and Stiegler's Gorge. Both raise important questions which are fare from being answered, let alone fully analysed. The latter, in particular, raise fundamental concerns due to its enormous scale and central location in the heart of the Selous Game Reserve and on the Rufiji River, which is the central artery of the property and region. The Stiegler's Gorge Dam may well be the single most important threat to the future of the Selous Game Reserve as inscribed on the World Heritage List.

► Oil/ Gas exploration/development

High Threat
Inside site, extent of threat not known
Outside site

Transects were cut through parts of the property, including after World Heritage inscription, as part of a Shell oil exploration programme in the first half of the 1980s. The exploration provided access to three quarters of the reserve, subsequently used by poachers, mining prospectors and cultivators (UNEP-WCMC, 2011). Further example of licensing incompatible with World Heritage status occurred in 2005 and 2006 when Dominion Oil & Gas and

Heritage Oil were awarded concession blocks covering most of the property (IUCN and UNESCO, 2008), although they had not yet received permission from the wildlife authorities at the time. To this day, there appears to be a lack of clarity in terms of mineral exploration and exploitation in the property and a major overlap between the game reserve and exploration and extraction licenses becomes obvious from publicly accessible cadasters (IUCN, 2017; IUCN and UNESCO, 2013). Even though Tanzania's Wildlife Conservation Act (WCA) generally prohibits prospecting and mining in game reserves (United Republic of Tanzania, 2009), an amendment includes an important modification, which is the explicit permission of prospecting for and mining of oil, gas or uranium in game reserves under defined conditions. This raises the important questions what those condition are and why prospecting licenses of resources other than oil, gas and uranium are still under discussion at all.

► Dams/ Water Management or Use

Very High Threat
Inside site, extent of threat not known
Outside site

Two large dam projects known as Kidunda and Stiegler's Gorge, respectively, have been under discussion for many years. Both would affect the property in many direct and indirect ways. As the Stiegler's Gorge is an even more massive project, the likewise enormous scale of the Kidunda dam has perhaps not received adequate attention. The concerns about both projects were documented by IUCN and UNESCO (2013). While the planning of Kidunda seems quite advanced, questions remain and a final impact assessment is pending. The reservoir surface area is reported to be of 5,500 ha with a maximum area of around 450 ha to be inundated within the property. Both in terms of scale and location, the proposed Stiegler's Gorge is an even more significant concern, perhaps the most severe overall concern about the future of the property, besides complex downstream impacts in Tanzania's largest watershed all the way to the important delta (WWF, 2017; Bernacsek, 1980).

Protection and management

Assessing Protection and Management

► Relationships with local people

Serious Concern

Relationships between the management authority and local people are reported to be "characterised by conflicts over access to resources, poaching and human-wildlife conflict incidents" (Niskanen, 2012). IUCN and UNESCO (2013) argued that the property illustrates the conceptual dilemma of exclusive conservation approaches by excluding resource use by local communities, who bear the costs of human - wildlife conflicts and only marginally benefit from tourism revenues. An earlier Selous Conservation Programme (SCP) supported the establishment of Wildlife Management Areas (WMAs) around the property, awarding sustainable hunting quotas and facilitating various rural development projects. Such activities deserve to be brought back and consolidated as a benefit-sharing mechanism for communities.

► Legal framework

Serious Concern

Since 2009 the Wildlife Act of Tanzania (Republic of Tanzania, 2009) explicitly permits prospecting and mining of oil, gas or uranium in all game reserves, including the property. This permitted the controversial Mkuju River mining project, while raising much broader questions. Unlike at the time of inscription, the legal protection status since 2002 has been incompatible with the clear World Heritage Committee position on extractive industries and World Heritage.

► Enforcement

Serious Concern

The ongoing poaching crisis which had resulted in the inscription of the property in the List of World Heritage in Danger in 2014 boils down to a law enforcement issue. In light of the scale and complexity of the organized crime structures involved in the illegal ivory and rhino horn trade, it is clear that the management response must go far beyond protected area

management and in fact include trading routes and the demand side. Nevertheless and despite encouraging and partially effective efforts to step up enforcement in response to the poaching crisis, law enforcement remains insufficient.

► Integration into regional and national planning systems

Some Concern

Compared to many other protected areas, SGR is privileged by its sheer scale, which makes it less vulnerable to edge effects etc. than smaller protected areas. There are promising efforts to link the protected area with its surroundings by establishing Wildlife Management Areas (WMAs). The most recent reactive monitoring mission notes "significant challenges including inadequate financial support, poaching of wildlife, insufficient equipment and weak governance" (IUCN, 2017). The same source makes reference to a “need to strengthen efforts to effectively protect the Selous-Niassa corridor”. Overall, there appears to be a clear need to strengthen the coordination of the planning and management of the property and adjacent lands.

► Management system

Some Concern

Since becoming operational in mid 2016, the Tanzania Wildlife Authority (TAWA) has been responsible for the management of Tanzania’s 28 game reserves, including the property. A General Management Plan (GMP) was in place between 2005 and 2015 (Republic of Tanzania, 2005). As pointed out by the most recent reactive monitoring mission, the GMP is therefore outdated implying that an updated GMP based on the evaluation of previous version is a matter of utmost priority (IUCN, 2017).

► Management effectiveness

Serious Concern

Some years ago, a specific assessment concluded that few of the provisions in the current Management Plan were being implemented due to resource constraints (Niskanen, 2012). Concretely, the assessment stated that the only 340 staff at the time were insufficient for the enormous area of exceeding 5 million, hectares; equipment and vehicles were poorly

maintained; management tasks seemed to be carried out on an ad hoc basis, without any work plans (Niskanen, 2012). The situation became most apparent during the peak of the poaching crisis, which management was unable to adequately respond to (IUCN and UNESCO, 2013). While resourcing was eventually increased, also benefiting from external support, management effectiveness continues to be limited.

► Implementation of Committee decisions and recommendations

Serious Concern

Overall, implementation of requests and recommendations expressed in Committee decisions has been slow and incomplete, as illustrated by the following examples: (i) Over several years the critically important revenue retention scheme was not re-instated, directly and severely affecting management (Niskanen, 2012); (ii) despite the Committee repeatedly urging the State Party to halt any prospecting or other mining developments within the property, the situation remains less than clear even when ignoring the Mkuju River uranium mine; and (iii) repeated requests to clarify the status of planning remain unanswered. The decision approving the controversial excision of an area within the property to permit uranium mining (World Heritage Committee, 2012) come with requests to include “additional valuable wildlife forest area to compensate for the excised area” and to ensure “enhanced and effective protection of the Selous-Niassa corridor”. Decisive follow-up remains to be seen five years later.

► Boundaries

Some Concern

The boundary follows natural features such as rivers and ridges for much of its length; other areas have been demarcated since 1991 with concrete/stone cairns at one kilometer intervals and a 15 meter-wide cut-line, which is also used as a management road (Republic of Tanzania, 2005). The vast size of the property helps ensure its protection.

► Sustainable finance

Serious Concern

Given the scale of the property financing is "grossly inadequate" (Niskanen, 2012), which became particularly obvious during the two major poaching

crises when staff was unable to respond to the challenges in a meaningful way. Another concern is the strong reliance on a single source of income from trophy hunting. The risks associated with this such a narrow financing strategy became apparent during a temporary suspension of the retention scheme designed for the re-investment of commercial hunting revenues in conservation. If trophy hunting – for whatever reasons – comes under pressure in the future, the usefulness of more diversified financing strategies will emerge.

► Staff training and development

Data Deficient

Staff training and development seems to mostly rely on support at the level of projects. Baldus (2006) reports investment in capacity development during a major and concluded bilateral cooperation programme. Another major project launched in mid-2017 is likewise aiming at capacity development among other objectives. Other than that systematic staff development appears to be limited.

► Sustainable use

Serious Concern

The management of the game reserve is in principle based on sustainable use, albeit with a narrow and almost exclusive focus on commercial trophy hunting. The narrow focus comes with important challenges in terms of (i) relying on just principal source of income and (ii) very limited benefits for local communities which are excluded from direct use and at best only marginally benefit from the trophy hunting.

► Education and interpretation programs

Data Deficient

Besides guiding offered by the limited number of camps and lodges operating in the tourism zone, no specific information appears to available in the World Heritage documentation.

► Tourism and visitation management

Some Concern

Trophy hunting is a major activity as detailed in the above threats section. Only three of the 47 blocks of the property have been allocated to non-consumptive forms of tourism, some 5 percent of the total surface area. While it can be argued that this implies a heavily underutilized potential, it is also true that the Selous Game Reserve therefore does not suffer from the impacts of excessive tourism.

► Monitoring

Serious Concern

Comprehensive aerial censuses of the entire property has repeatedly been conducted on 7 occasions between 1976 and 2002 (United Republic of Tanzania, 2005), and more recently in 2013 and 2014. The latter efforts enabled management and authors to quantify the scale of elephant poaching. Despite some methodological debates surrounding the compatibility of the various data sets and interpretation of census data, there is a reasonable foundation to understand the order of magnitude of population trends of elephants. Otherwise, systematic ecological monitoring suffers from general resourcing and capacity constraints (Niskanen, 2012). The Mkuju River uranium mining project posed new challenges in terms of monitoring.

► Research

Serious Concern

Systematic long-term research is limited and no research programmes aimed at addressing management needs were reported by Niskanen (2012).

Overall assessment of protection and management

Serious Concern

Management is severely constrained by limited funding and staffing, but also legal changes which permit activities which are in direct contradiction of basic conservation objectives. The poaching crises showed a limited capacity to respond to increasing pressures. The limited and slow response to important World Heritage Committee requests and recommendations is another indication of the very limited overall effectiveness of protection and

management.

▶ **Assessment of the effectiveness of protection and management in addressing threats outside the site**
Serious Concern

Due to its enormous size the property is less susceptible and vulnerable to external threats and edge effects. Despite this privileged position, management was not in a position to adequately respond to the most recent and ongoing poaching crisis even though a similar crisis happened earlier. In light of the growing, poor and resource-dependent population near a vast resource-rich reserve from which local communities are excluded, the limited interactions between SGR management and neighboring communities amount to a major external threat which could strongly compromise the management effectiveness.

▶ **Best practice examples**

Retrospectively, it is important to remember that the on-going poaching crisis is not unprecedented. An earlier crisis was responded to by a massive multi-year effort which demonstrated the possibility of effectively countering even most severe challenges.

State and trend of values

Assessing the current state and trend of values

World Heritage values

▶ **Globally significant populations of large mammals**
High Concern
Trend:Deteriorating

The dramatic decline of the globally renowned elephant population of the Selous Game Reserve following recovery from an earlier poaching crisis illustrates that the large mammal populations are vulnerable despite the vast areas of largely intact habitat.

► Rare, endemic and endangered species

Critical
Trend:Deteriorating

The most dramatic example epitomizing that even a vast protected area is no guarantee for species conservation is the black rhino. With 2,135 recorded at the time of inscription, the population was estimated at just between 45 and 60 by 2010 (UNEP-WCMC, 2011).

► Diversity of vegetation types

Low Concern
Trend:Deteriorating

In the absence of any major developments affecting the game reserve, it is expected that the diversity of vegetation types remains unaltered. However, the destruction of riverine forests by uncontrolled fires has been noted (UNEP-WCMC, 2011). However, unless the dramatic decrease of the elephant population can be halted and eventually be reversed, complex vegetation impacts are inevitable as elephants are prime examples of large herbivores shaping their natural environments.

► Large, roadless and mostly undisturbed wilderness area largely free of infrastructure

Low Concern
Trend:Data Deficient

Besides the railway, the excision of a part of the property to allow uranium mining and the still visible scars in the landscape from oil exploration in the 1980s most of the property remains in a wild state and continues to be difficult to access.

► Sand rivers and associated floodplains

Data Deficient
Trend:Deteriorating

The sand rivers and associated floodplains are affected by increasing pressure on the upper reaches of several tributaries of the Rufiji River, most notably from rice production and dam construction, such as on the Great

Ruaha River (WREM, 2012).

Summary of the Values

▶ **Assessment of the current state and trend of World Heritage values**

Critical

Trend: Deteriorating

The vast wilderness area remains largely unchanged as such besides a quantitatively negligible excision in 2012. Nevertheless, important conservation values of the property are being eroded through extreme levels of poaching of keystone wildlife species, and mounting pressures for exploitation of water and mineral resources. The limited animal census data available suggest a significant decline in elephant populations with only 13,000 elephants left and 95-98 percent loss of black rhino since World Heritage inscription. This constitutes a critical concern even though the ongoing availability of vast tracts of intact habitat gives reason for cautious optimism provided the political willingness and the provision of conditions enabling the effective management of the property.

▶ **Assessment of the current state and trend of other important biodiversity values**

Data Deficient

Trend: Data Deficient

There are no known major concerns about freshwater diversity at this stage. It can be argued that some of the documented invasive species are likely to locally affect freshwater biodiversity. Likewise, the increasing modification of natural flows through upriver agricultural irrigation projects certainly has some effects on freshwater biodiversity. However, in the absence of data, no specific assessment can be offered.

Additional information

Benefits

Understanding Benefits

► Fishing areas and conservation of fish stocks

Direct consumptive use of wild biodiversity for human food consumption is essentially excluded by law and can only occur illegally. Nevertheless, it can reasonably be argued that the natural river system and associated processed like flooding and sedimentation considerably contribute to sustaining important downriver fisheries all the way to the Rufiji delta, which in turn contributes to sustaining important coastal fisheries. These ecological relationships constitute an indirect use value and tangible benefit of the conservation of the free-flowing Rufiji (Hoag, 2013; Calas et al., 2013).

At this stage there is no indication that the deteriorating conservation status of SGR might affecting the productivity of downstream fisheries. At the same time, it is clear that pollution, such as from uranium mining or additional and major modification of natural flows from possible dam construction would inevitably result in negative impacts.

► Access to drinking water, Commercial wells

The vast Rufiji River basin is the artery of life of a considerable part of Tanzania. While no direct use is occurring within the property, the provision of water is one important ecosystem service and benefit.

At this point in time, there is no major interruption of the natural processes underpinning the provision of water of high quality. Possible contamination from mining and modification of flows and evaporation from reservoirs would undoubtedly affect these important ecosystem services and benefits.

► Wilderness and iconic features

Selous Game Reserve is a renowned and legendary place with a longstanding formal conservation history. There is a dilemma though in terms of the equally longstanding separation of the protected area from local communities, which undoubtedly had more intensive relationships with what is today the property, including at the cultural and spiritual level.

The establishment of Wildlife Management Areas (WMA) adjacent to SGR is a

promising approach to re-introduce and promote sustainable use under contemporary conditions.

► Outdoor recreation and tourism, Natural beauty and scenery

The tourism potential of the property appears to be underutilized, non-consumptive tourism is localized and modest in scale. Nevertheless, outdoor recreation and tourism is being offered and could increase with adequate investment and marketing. The trophy hunting niche is successfully occupied by specialized operators, permitting privileged access to wild and remote areas (Jaeger et al., 2013).

Unfortunately, the most attractive areas for non-consumptive tourism, which are zoned as such, overlap with the areas which would be directly affected by the possible construction of a large dam at Stiegler's Gorge.

► Importance for research

As large-scale wilderness areas are disappearing all over the world, the significance of the remaining areas like SGR becomes ever more important as the last reference areas to study and understand ecological and biological processes and phenomena occurring with a high degree of naturalness (World Heritage Committee, 2010).

► Carbon sequestration, Coastal protection, Flood prevention, Water provision (importance for water quantity and quality)

The vast Miombo woodlands of the property harbor important carbon stocks, which are under increasing pressure from agriculture, ranching and charcoal production outside of protected areas across much of its natural distribution. The free-flowing Rufiji River enables the ongoing formation of an important delta, while also being of critical importance to downstream users across a large part of southern Tanzania (Hoag, 2013; Calas et al., 2010).

► Direct employment, Tourism-related income, Provision of jobs

Considering the surface area the direct income and job opportunities in management or tourism, including trophy hunting, are modest but not negligible.

Summary of benefits

A major benefit of the property is that its very existence has been contributing to maintaining the globally important conservation values one of the largest, mostly undisturbed place throughout many decades of economic, social and political change. As such places become ever rarer, the relative importance of this benefit constantly increases. Due to its vast size, the property provides significant ecosystem services in terms of carbon, water and downstream benefits along the mighty Rufiji all the way to the delta. The tangible benefits for adjacent communities remain limited which is a dilemma requiring management responses.

Projects

Compilation of active conservation projects

№	Organization/ individuals	Project duration	Brief description of Active Projects
1	Frankfurt Zoological Society		Various projects since the 1980s in direct support of the Selous Game Reserve.
2	KfW, MNRT and implementation partners	From: 2009 To: 2012	Landscape connectivity and wildlife conservation in the Selous-Niassa Corridor.

№	Organization/ individuals	Project duration	Brief description of Active Projects
3	KfW in cooperation with MNRT, TAWA and non-governmental organizations WWF and FZS.	From: 2017 To: 2022	The Selous Ecosystem Conservation and Development Program (SECAD) was launched in June of 2017 to be funded by KfW on behalf of the German Government. Implementation will be by the Tanzanian Ministry of Natural Resources and Tourism (MNRT) and the Tanzania Wildlife Management Authority (TAWA) in cooperation with non-governmental organizations World Wide Fund for Nature (WWF) and Frankfurt Zoological Society (FZS). The official press release on the occasion of the launch of SECAD, states a five-year project horizon with a EUR 18 m. m budget dedicated to the management of the Selous Game Reserve and selected parts of the buffer zone around the reserve and the Selous- Niassa Corridor.

Compilation of potential site needs

№	Site need title	Brief description of potential site needs	Support needed for following years
1	Consolidation of transboundary communication, coordination and cooperation	The importance of the still functional but increasingly threatened linkages with neighboring Mozambique and in particular the vast Niassa Game Reserve deserve further attention. While several past and ongoing projects have worked in the corridor, there continues to be a need for consolidation in light of strongly increasing pressures. In principle, the World Heritage Convention could provide an umbrella and platform for a transboundary initiative if the concerned State Parties to the Convention see fit.	
2	Tangible benefits for nearby local communities	While several projects have worked on the promotion of local benefits, the dilemma of a vast and resource-rich protected area which is legally inaccessible to growing and poor local communities nearby remains. Whereas opening up the reserve for selected resource use could lead to severe degradation, supporting sustainable livelihoods in the surroundings in the sense of a buffer zone is becoming ever more important.	

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