PAPACO

Newsletter from African protected areas

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Opinion piece

This month, a guest will be opening the NAPA. Professor Klauss Bosselman is Chair of IUCN's Ethics Specialist Group and he will be talking about just that: ethics within the Union. Enough to give us some ground for reflection…

- Dr Geoffroy Mauvais

OPINION ARTICLE BY PROFESSOR KLAUSS BOSSELMANN

Humanity is plundering the planet with accelerating speed - destruction of natural habitats, wildlife and biodiversity included. If we do not pause now, rethink our relationship with nature and embrace non-anthropocentric ethics of respect for all life, not just human life, when will we ever? As IUCN, we should be at the forefront of ethics-based policies and practices.

Despite a long tradition of ethical thinking - including the adoption of the Earth Charter in 2004 and many subsequent initiatives towards strengthening IUCN's moral leadership -, the image of IUCN in the general public is solely that of a science-based organization focused on short-term technical and economic solutions. An ethically informed approach to IUCN's programme and policy is still missing.

The Union's Mission Statement is 'to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable.' This calls for an ecocentric approach to nature conservation! Nature is not an assembly of natural resources for human consumption, but refers to the physical world and life in general. Humans are just part in it. Respect and care for the community of life therefore must guide all human behaviour. This has been clearly expressed in the UNEP/IUCN/WWF document Caring for the Earth (1991) and is the core principle of the Earth Charter that IUCN is supposed to be guided by. Similarly, no less than 27 international agreements – from the 1992 Rio Declaration to the 2015 Paris Agreement on Climate Change and the French proposal for a Global Pact for the Environment – call upon states 'to preserve the integrity of Earth's ecological systems'. The implications of this fundamental duty have been consistently ignored by governments and IUCN should have no part in ethical and legal illiteracy.

The IUCN family is large and there are members who are acutely aware of IUCN's ongoing apathy. One recent example is the intense debate

around trophy hunting. IUCN does not have a policy on trophy hunting, but continues to follow the 2012 'Guiding Principles' from the SSC's Sustainable Use and Livelihood Specialist Group which considers 'well managed' trophy hunting acceptable as a form of 'sustainable use' justifying it on anthropocentric, utilitarian grounds. Its actual benefits for local communities and wildlife conservation are more assumed than proven, but crucially IUCN's current position reveals a lack of willingness to take the 2004 Earth Charter resolution and subsequent ethics resolutions seriously. Worse, a number of motion submissions for the upcoming World Conservation Congress in June have been rejected by the Policy and Programme Committee as they are perceived as potentially controversial.

The Ethics Specalist Group of the IUCN World Commission on Environmental Law, like many other bodies in IUCN, has taken a strong stance against trophy hunting. There are in fact many who cannot bear the thought that our Union should be tolerating the killing of lions, elephants and rhinos for the pleasure of rich white men (and some women) in the name of 'sustainable use'. The WCC in Marseille offers an opportunity to pause, consider IUCN's Mission Statement in the light of what it actually means, discuss comprehensively without the usual pressure by lobby groups and, if finally this comes to a conclusion, condemn any forms of trophy hunting and accept our responsibilities in the community of life.

- PROFESSOR KLAUS BOSSELMANN, PHD

CHAIR, ETHICS SPECIALIST GROUP, IUCN WORLD COMMISSION ON ENVIRONMENTAL LAW - IUCN WCEL ETHICS SPECIALIST GROUP

Professor K. Bosselmann is the director of the New Zeland Centre for Environmental Law (Auckland) - NZ Centre for Environmental Law ; Chair of the Ecological Law and Governance Association - Ecological Law and Governance Association ; Co-chair of the Global Ecological Integrity Group - Global Ecological Integrity Group ; Co-chair of the scientific committee of the Common House of Humanity - Common Home of Humanity and of the steering committee of the Earth Trusteeship Initiative - Earth Trusteeship Initiative ; Legal expert at the Global Pact for the Environment - Global Pact for the Environment and knowledge network expert at the UN Harmony with Nature - UN Harmony with Nature.

Our courses

ONSITE COURSES

University Diploma: back to school

The sixteenth group of students pursuing the University Diploma in Protected Area Management (French only) started classes on 17 February. The 20 students are now in Ouagaougou (Burkina Faso) for seven weeks of intense training, after which, successful candidates will be given a University Diploma by Senghor University.

If you are a French speaker, note that calls for applications are published on social media and in our NAPAs. So make sure you follow us by filling-in the newsletter subscription form on papaco.org/napa.

40 000 ENROLMENTS!

- MOOCs (online courses)-

Current session: 17 February to 19 July 2020.

We're breaking records here! Only two weeks after the session started, you were already over **6,000 enrolled** in our MOOCs. And as if that weren't enough, we also exceeded the **40,000 enrolments** mark since the MOOCs were first launched in 2015! Needless to say, we're well on our way to reach our target: 50,000 enrolments by the time we see each other at the IUCN Wolrd Conservation Congress in June...

If you're done with a MOOC and wish to receive your certificate of completion, please send a request at moocs@papaco.org.

Registrations close: 1 July 2020.

REGISTRATIONS: mooc-conservation.org

MOOC conservation

Featuring this month: Blockchain

BLOCKCHAIN IN THE MOOC-TECH

The MOOC-Tech is about new technologies in protected areas, and module 8 more specifically deals with the concept of Blockchain. Roman Eyholzer from the Porini Foundation is the main teacher of this module.

Goal of the MOOC-Tech: knowing the context of new technologies applied to conservation, existing techniques, prerequisites for their implementation, their scientific and / or technical basis, their opportunities and limitations, their uses in the field etc.

Sequence 8.2 concept

2009: launch of first public blockchain called “Bitcoin”. The Bitcoin blockchain also introduced a coin which is used for value transfer and value store on the Bitcoin blockchain.

2015: a new type of blockchain emerges: Ethereum. Thus, instead of creating a new blockchain for every new Coin, you now have one blockchain for all new coins.

BLOCKCHAIN FEATURES

Ledger: datafile that contains all the blockchain data.

Distributed ledger. The ledger is not stored on a single computer but distributed on a large number of computers called “nodes”. This one of blockchain’s most important features: it is not centralized and has no single point of authority which makes the system considerably more secure.

Decentralised system. A decentralized system is a subset of a distributed system. The primary difference is where “decisions” are made and how the information is shared throughout the network. A blockchain is also a distributed network.

Permissionless and permissioned blockchain. Bitcoin and Ethereum are “permissionless” blockchains, giving access to anybody. “Permissioned” blockchains have an additional access control, so that only a limited group of participants have access to the network. Permissioned blockchains are mainly used by companies for their business purposes.

WHAT IS BLOCKCHAIN?

A blockchain can be divided into 3 layers:

1. bottom layer or «hardware layer»,
2. middle layer or «network» layer”,
3. top layer or «application layer”.

A blockchain is embedded into the bottom layer: a number of blocks is lined up to a chain and stored on a computer. Blocks are created on a regular basis. They are added to the blockchain using a so-called hash with 40 characters. The hash of a previous block is used to create the new hash for the next block. This locks every block in the right order, forming a (block-) chain over time which cannot be broken.

In the middle layer, all computers are connected to each other and form a decentralized network, where each computer is called a node. In a permissionless blockchain, every computer (or node) can add new blocks to the blockchain, but only 1 node will win.

THE WINNING NODE

Different consensus mechanisms have been developed to find out which node “wins”. This node can then add or “close” the block and gets his reward, which is usually a number of coins used on that particular blockchain.

PoW consensus. The most commonly used consensus mechanism is Proof of Work (PoW), which is used by both, the Bitcoin and Ethereum blockchain. In PoW, the winning node is established through solving a mathematical puzzle. Solving puzzles needs a lot of computing power and this is

the reason why running a blockchain with PoW is using so much energy. Changing to another consensus mechanism like Proof of Stack (or PoS), would allow Ethereum to run with much less energy. New blockchains have been built to reduce energy consumption.

Sequence 8.3 BLOCKCHAIN: NEW POSSIBILITIES

SMART INTELLIGENT

Smart contract: a self-executing contract.

The parties write their agreement directly into a block. Once the block is closed, the smart contract is embedded into the blockchain and can not be changed anymore. An interested individual can "see" the smart contract in the blockchain and as the contract is sealed and timestamped in a block, the blockchain becomes a ledger where every transaction is traceable, transparent and irreversible. Blockchain is Peer to Peer (or P2P) which means that in a smart contract, the 2 parties can interact directly without any intermediate.

WALLET

Wallet: where you store your cryptocurrency on the blockchain.

Each wallet has 2 keys:

a public key which you can send to everybody

a private key, which is used to unlock your wallet in order to send funds, it should be kept private.

Using your set of public and private keys, allows you to look at your balance and transfer funds to any other wallet without the need of an intermediary or third party (e.g. banks). This will not only reduce transaction costs but also allows immediate settlement between two parties anywhere on this globe.

Risks and advice. 1. If you lose your private key, it is impossible to unlock your wallet. 2. Wallets are free, so it is advised to store your capital in different wallets. 3. Thanks to a private key, you can transfer funds between two wallets at any time and without intermediary

WHO OWNS A BLOCKCHAIN?

A blockchain is run by nodes and anybody can run a node, this is why a blockchain belongs to everybody using it.

Mining. If you run a node on your computer, you contribute to the network and together with many others you can compete to solve the puzzle and get rewarded. This is called "mining" and in a way, a blockchain belongs to every single "miner" using it. As miners are found all over the planet, the network of nodes is also spread over the globe Because there is no central authority, blockchain cannot be stopped by any country or government.

STABLECOINS

Cryptocurrency's are known for a high volatility they go up and down sharply when supply or demand changes in the market. Volatility can become a problem for a park and if you don't want to speculate on the future value of a coin, then you can use a stable coin instead.

Stable coins are cryptocurrencies which are pegged to a national currency like the dollar, Euro or Swiss franc, or even to Gold. Buying a stable coin will significantly reduce your risks for dealing with cryptocurrencies.

WHERE CAN I BUY CRYPTOCURRENCIES?

Cryptocurrencies are available on a crypto exchange platform, where you can send your cash and receive cryptos in return into your wallet. Using your phone, it is very easy to buy and exchange cryptos and even the grocery store in your village can accept cryptos. If tokens become accepted for everyday business, then donors and Investors from outside can invest and they can be used for nature conservation or to create jobs and increase community wealth.

Sequence 8.4 blockchain applications

Blockchain technology allows P2P value transfer at minimal costs and to trace these transactions on a global ledger.

Fight against counterfeit. Blockchain provides information on provenance, or "proof of origin", where you validate the location of production on blockchain and get additional information on production standards, transport routes and the people behind the product. Embedding the product in blockchain will allow a buyer to validate and follow the product from the park all the way to his home and people can verify all content and the promise made with the purchase.

Immediate payment. Blockchain creates trust between buyer and seller and allows to settle the bill with the click of a button. The buyer chooses the product and sends a token

or coin from his wallet to the wallet of the producer in a park, which can be done immediately and from anywhere without any bank or other intermediate organisation. Creating P2P business opportunities will increase the willingness to buy directly from the park, thus creating new revenue streams for parks and additional finances for conservation work.

Monitoring of transactions. Real time monitoring of supply chain transactions on blockchain also allows to track illegal activities or monitor copyright protection for your product.

Decentralised funding. With blockchain, you can fund decentralized energy and water production and sell the products to the community at a low price. Cryptocurrency enabled smart meters allow cheap access to energy and water and in combination with a blockchain ledger offer opportunities for investors to build infrastructure in regions left out until today through to lack of funding.

Micropayments. Using micropayments on blockchain will close the funding gap and using cryptocurrency for trading excess energy and water will incentivize a responsible management strategy and lead to better usage of available resources.

Funding in rural areas. With blockchain, you can link global funds with local investment opportunities and reroute financial resources to rural areas. P2P funding over blockchain can come in as donation or with the expectation of a financial return of investment and in both ways, is much cheaper than traditional funding mechanism.

Micro-crowdfunding. Small contributions are as easy to integrate as bigger ones. Thanks to direct crowd-micro-investment in blockchain, funds are locked in a smart contract and directly transferred to the PA after reaching a certain amount or predefined goal. Smart contracts allow to keep control over funds and are only triggered when all promises and conditions kept in the smart contract are fulfilled, giving a “impact guarantee” to the funder.

Reliability of the carbon market. Two problems make this market unreliable: the high volatility and double counting. Using a global register on blockchain will end the double counting problem and guarantee that certificates have not been bought before. It would also submit to necessary standards and regulations and where carbon offsets can be attached at a microscale to individual products. A blockchain-powered platform for carbon offsetting can be implemented to automatically align licence creation, thus avoiding an over- or undersupply of certificates, and thereby keeping market prices in a predefined range without the need for emergency or reactive interventions. Using smart contracts can ensure that credits you buy are registered on the blockchain and automatically retired after an agreed term. All active licences are easily reported and are transparent and traceable on the ledger

Data management. Automated real time data collection is the next step in industrialization and blockchain can be used to incentivize data collection and management for better sustainability accounting.

Improve corporate reporting. More than 70% of large companies mention the UN Sustainable Development Goals (SDG) in their annual reports, but less than 10% of the company’s really take measurable action towards fulfilling the SDGs. A decentralized and open-source ledger of global data has the power to enhance corporate reporting beyond their self-reported data. Blockchain applications are developed to support third-party assurance of sustainability reporting and compagnies providing verifiable data can be rewarded – coupled with cryptocurrency incentives – for their sustainable business approach. This broader assessment would provide shareholders and other stakeholders with a more realistic view of companies’ sustainability performance and impact.

Creating a global data ledger. New blockchain-enabled geospatial platforms are in the early stages of exploration to monitor, manage and enable market mechanisms that protect the global environmental commons – from life on land to ocean health. Using a global data ledger to identify, verify and transact weather data will allow a precipitation intensity monitoring and forecasting and to develop an asset-backed token system for clean, accessible drinking water to enhanced emergency disaster response.

Disaster relief. Blockchain solutions are used to coordinate real-time disaster relief and in case of humanitarian crisis can ensure and document that scarce resource like food, medicine, shelter and water are distributed in a fair and equal process.

Sequence 8.5 NEW BLOCKCHAIN USES

CITES

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), regulates international trade for endangered species in the wild. CITES permits ensure that importing or exporting wildlife is legal, traceable and sustainable.

Current situation. CITES permits are currently issued and exchanged in paper format and unscrupulous traders exploit this weakness to present fraudulent CITES trade documents to authorities.

Blockchain solution. To ensure integrity in the future, CITES wants to implement an electronic permit system and published the CITES blockchain challenge. The blockchain challenge demands, that a permit can only be used once, contains all the data that the authority must be able to collect and must be stored and kept accessible for many years after the trade took place.

This is exactly what blockchain can offer: a transparent and traceable ledger ready to store timebound information's over long periods with unique identifiers and in a tamper proof way. A smart contract can be used to settle the costs involved for issuing the permit at the same moment it is released. A future CITES blockchain will facilitate trade and reduce wildlife crime in a cost-effective and tamper proof way, the ideal use case to show the potential of blockchain.

PHILANTROPIC PROJECTS

Limitations. Most of these projects lack funding, as the traditional donor is not on blockchain and continues to use traditional funding ways to support his favourite projects.

Crowdfunding platforms. Peer-to-peer crowdfunding platforms are evolving fast. These will give the future donor not only direct access to the person or organization receiving the funds, but also the possibility to see how progress is evolving in the project.

Smart contracts. Using smart contract will allow to finance only that part of a conservation project he is interested in. In a protected area, this could mean that for financing monitoring of a species, one donor would pay for working hours, another for fuel and a third donor would offer the new glasses to a ranger. Once all parts are financed the survey can be done and the smart contract will be triggered and a report, for example with the number of animals, is automatically send to all donors participating in the project. Smart contracts will allow to pay for the work when it is done and inform a participating donor without additional work or costs for the park. The donor can validate that his funds were used for the agreed purpose and can automatically receive his tax exemption statement.

CERTIFICATION

Education. Skills acquisition is certified through a paper diploma. Educational credentials could be securely and accessibly stored in a ledger. This would not only capture lifelong learning activities but also strengthen trust in educational offers and prevent fraud. The same can be done with a certification standard, like the IUCN Green List Standard, a global standard for effectively managed and fairly governed PAs

Financial instruments. Blockchain allows direct access without any intermediate and new financial instruments are being developed to integrate this technological feature to validate impact. These new markets are based on a common interest between two parties which are then locked in a smart contract and only executed when the goal is achieved. Using a permissionless blockchain ledger will give investors more control and transparency and hence more incentive to invest in tasks otherwise difficult to finance.

Investments with social impact. Larger sums can be found if a return on investment is guaranteed. Lately, social impact investing has steadily been on the rise. Social impact investment on blockchain would not only benefit from lower transaction costs for impact measurements and pay out but would also increase the interested investor segment and mobilize additional financial resources.

Shares. A company could even tokenize their shares and present them on blockchain opening new investment opportunities to the public. Once a year, the company then publishes their profits and all stakeholders will immediately receive their dividends in their wallet.

Right to use natural resources. Using blockchain, we can reinforce entitlements to use a natural resource and incentivise sustainable actions at the same time. Ecosystem services are benefits that humans freely gain from the natural environment and are often integral to the provisioning of

clean air and drinking water. Integrating ecosystem services on blockchain using a "ecosystem-token" would allow the proper allocation of funds to all stakeholder and incentivise the use of this resource in a sustainable manner. This would increase interest to maintain healthy ecosystem services and would also give a price tag to unsustainable management practices like pollution or ecosystem alteration.

Blockchain games. Blockchain games are still in its infancy but early adopters like CryptoKitties showed the enormous market potential for new applications. Themed games on blockchain allow to align educational content with new funding for a park. For example, a gamer could build a park on a platform and pay for virtual ranger hours to spot and manage animals or build a shelter. These payments could be transferred into a blockchain wallet for an existing park and finance predefined management tasks. These would allow to combine educational needs with new funding opportunities for park management.

LIMITATIONS OF BLOCKCHAIN IN AFRICA

There are still key challenges to be addressed if blockchain is to work for conservation in Africa, which include a lack of access to digital infrastructure among poorer communities, who are often stewards of natural resources and environmental services.

Sequence 8.6 OTHER UP AND COMING TECHNOLOGIES

The following products are not yet available but will substantially change the way we do our work once they get on the market.

LoRaWAN

First steps have been taken to integrate LoRaWAN technology into regular wildlife collars. Replacing traditional data communication with LoRaWAN will greatly reduce the necessary energy to transfer data. Early developers are suggesting that combined GPS-LoRaWAN device could stay functional during the entire lifespan of an animal, making recapture and battery change truly unnecessary. LoRaWAN still uses antennas to capture the signal but at least two compagnies started to launch satellites to capture the signals out of the orbit, thus avoiding any additional installations on the ground. LoRaWAN collars have certainly great potential and as prices are low, will increase the number of collared animals as well as the number of positions taken during their lifespan allowing more detailed information on animal movement and migration patterns.

DNA BARCODE SCANNER

A DNA Barcode Scanner is a hand-held device capable to confirm a species identity using a small sample and a new promising tool to fight seafood fraud and wildlife trafficking.

Problem. Estimated share of illegal wild-caught food: 30%. Wild products are difficult to identify visually and when they have been turned into products such as furniture, filets, or oils are almost impossible to track.

Solution. Using a DNA barcode scanner for immediate identification of the species would greatly reduce trafficking and help regenerate a whole range of species on this globe. The technology behind the scanner is already available in labs, were species or even individual animals are identified through DNA extracted out of hair roots, but it will take more time to have this technology integrate in a handheld device.

CAMERA TRAPS

Camera traps are cheap, easy to use and an important resource for environmental researchers.

Problem. Battery life is limited, and it takes a lot of time to manually sort through and delete the surplus pictures.

Solution. The next generation of camera traps will include computer vision to selects relevant images, they'll have connectivity to transfer data and check the trap configuration, they will also use solar power to extend their activity time. Computer vision software will be able to analyse picture on the spot and reduces false triggers to a minimum. The remaining data will then be more relevant and less time consuming in processing. Next generation camera traps will make data capture and transfer more reliable and increase the number of spotted animals.

ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI): ability of a machine or a computer program to think and learn.

Problem. Despite improvements in camera traps, it is still impossible to estimate the number of animals in a given area.

Solution. You need an individual recognition technique, and AI could soon fill this gap. Researchers in China now

developed an AI-powered facial recognition app that can identify specific individuals using an algorithm (e.g.: pandas). But you still need a huge database, including tens of thousands of pictures and videos, to train the algorithm and make it "smart" enough to positively identify individual animals, but when this is available, the algorithm then becomes very efficient. Once these algorithms are "smart" enough, AI will allow more precise data on population, distribution, ages, gender ratio, birth and deaths of animals living in the wild.

BIG DATA

Big data: vast amounts of data collected and analysed for conservation measures, far surpassing the amount of data now available.

Problem. Data from next generation camera traps, acoustic sensors, aerial imagery (drones and satellite), citizen science apps, human detection and real-time ground sensors (temperature, humidity, wind) will greatly increase the need for real time analyses and data aggregation. These big datasets cannot be analysed manually.

Solution. One must use new technologies like the "smart" algorithms to classify animal patterns and acoustic activity or game theory to optimize patrol routes or predict migration patterns or cloud-based machine learning, where data is collected and shared in the cloud, creating a massive data set which can then be used in conservation work. Mastering data streams will allow us to collect, transact and manage data on environmental habitats and genetic biodiversity of species and habitats on a global level. • A MOOC session is ongoing, and you can enrol in and follow the MOOC-Tech until 1 July. Registrations : mooc-conservation.org. Fermeture des inscriptions : 1er juillet. Session closes: 19 July.

PANORAMA

SOLUTIONS FOR A HEALTHY PLANET

Piloting Temporal Protected Areas for turtle conservation in island states: lessons from Seychelles

The implementation of Protected Areas on a seasonal basis provides protection for turtles and their off-spring during the nesting and hatching season. The Temporal Protected Area approach ensures that the turtles are not disturbed, harmed or poached during these important periods.

This initiative focuses on the protection of hawksbill turtles, as they nest seasonally, mostly on the inner islands of Seychelles. The main nesting areas in the south of Mahe, the largest and most populated island in Seychelles, have been nominated for temporary protection.

The nesting beaches are patrolled regularly with an intensified effort during the peak season to facilitate protection of the species at this critical life-cycle phase, as well recording of data from nesting turtles. Opportunistic encounters with the nesting females provide the necessary data for individual identification to better monitor their nesting behaviours.

Nesting turtle, Grand Police Bay, Mahe Island
© Vanessa Didon, MCSS

Full article: here.
More info on Panorama: here.

Announcements

CAP DEV 2020 - ONE MONTH LEFT

Capacity development stand at IUCN World Conservation Congress

capdev2020.papaco.org

Goal of the stand: To be the information hub on capacity building programmes in the field of conservation.

If you wish to use the Cap Dev stand to showcaseyour conservation-related capacity development work, you have until **30 March** to get in touch and send us your proposal.

How?

Send an email to capdev2020@papaco.org. Please include the fllowing information in your mail:

- name of your organisation,
- the link between your work and capacity development,
- what you would like to showcase, and,
- if your Congress attendance is confirmed.

Call for proposals deadline: 30 March2020
More info: capdev2020.papaco.org

NB: we accept proposals and presentations in all languages, as long as there is a public for it.

WCS

Research and Monitoring Unit Director

Where? Bomassa, RDC

>> Click here to access full job description <<

Country Director Rwanda

Where? Kigali, Rwanda

Applications deadline: 15 March 2020

>> Click here to access full job description <<

Program Manager

Where? Brazzaville, ROC

Applications deadline: 15 March 2020

>> Click here to access full job description <<

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