Namibia Scientific Society and Gobabeb: Science in Transition

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Abstract

The 60th anniversary of the Gobabeb–Namib Research Institute is an opportune time to look back on Gobabeb's institutional development and accomplishments and to look forward to future directions. Here we present a synopsis of the finding and founding of Gobabeb; the building of its research and training platforms; the reframing and transformation of the institution following Namibian independence, establishing the diverse funding to secure its future as a thriving research institution; and the development of relevant linkages and science networks, including the relationship to the Namibia Scientific Society.

Introduction

> '*When the station is built it will be the first in Africa, South of the equator, to concern itself solely with the study of desert conditions. It is to be hoped and expected that scientists of many disciplines besides the biological ones will come from other parts of the world to work in it*'
> (Lawrence, 1960).

An audacious aspiration, but six decades after its establishment in 1962, the Gobabeb–Namib Research Institute, a modest field station by international standards, off the beaten track in the middle of the Namib Desert, is thriving. Its extensive network of students, scientists, professional societies, collaborating institutions, decision-makers, and public sympathisers is prominent in Namibia, with many connections across southern Africa and globally. The Namibia Scientific Society (NSS) has been a partner in developing this network, involved in finding and founding Gobabeb and participating in each other's development ever since.

With this article, introducing a collection of papers celebrating Gobabeb's 60th anniversary, we provide a synopsis of this institution's development from 1962, and end with an outlook on its future. Our overview draws on a wealth of publications, several previous overviews (Lawrence, 1960; Fitzsimons, 1961; Lawrence, 1977; Seely, 1979; Brain, 1990; Seely, 1990; Seely & Sguazzin, 1992; Seely et al., 2000; Henschel & Lancaster, 2013), and other narratives.

Early scientific endeavour in the Namib

Since the 19th century, accounts of exploration along the arid western coastline of southern Africa have described a unique environment that has intrigued naturalists and collectors. Early scientific discoveries closely follow the activities of early traders, missionaries, and other intrepid explorers of the unknown, who often collected curiosities and commented on them in journals, both personal and scientific. These investigations accelerated during the early colonial era.

In 1925, the South West African Scientific Society was established to be a hub of scientific enquiry and evidence in Namibia. Many of the pioneering researchers of the Namib Desert worked in collaboration with members of this society. Local inhabitants had knowledge of the country, specific locations of interest, and how to traverse and survive the Namib, all crucial elements for successful research.

Finding Gobabeb: 1948–1961

The aftermath of World War II marked a turning point for scientific research in the Namib Desert. Teams of scientists from several countries spent over a decade on scientific explorations that crisscrossed the arid west of southern Africa, in South Africa, Namibia, and Angola, largely funded by private donations (Koch, 1963). The increasing interest in the Namib Desert made it imperative that a permanent scientific base station in the desert be established. The Transvaal Museum would play a leading role (FitzSimons, 1961), with the new station's focus being systematic biological research. The search was on to find the ideal location for such a desert research facility.

In 1959, these explorers "found" Gobabeb in the very middle of the Namib Desert, which they set out to investigate with enthusiasm (Anon., 1959; Brain, 1990). The scientific potential of the site was immediately recognised.

The management of the incipient research station fell jointly under the Windhoek Museum, S.W.A. Administration's Agriculture and Nature Conservation Department, the Transvaal Museum and the S.W.A. Scientific Society. From the outset, it was envisioned that the station and its facilities would be availed to all other accredited institutions or individuals wishing to conduct desert research there (FitzSimons, 1961).

Founding Gobabeb: 1962–1969

The Namib Desert Research Association was formed as a limited non-profit company to secure financial commitments for infrastructure and operations by the S.W.A. Administration, the South African Council for Scientific and Industrial Research (CSIR), and the South African Museums Association. Dr Eberhard von Koenen, a long-term associate of the NSS, was appointed Gobabeb's resident officer-in-charge, as later vividly described in his autobiography (von Koenen, 2009).[1] His tasks included putting a weather station into operation, establishing a secure water supply and a landing strip, and managing the building of a laboratory, offices and housing. Raising funds to build the research station was a challenge (FitzSimons, 1961), which was finally realised through support by von Koenen's patron, Erich Lübbert. At the official opening of Gobabeb on 08 October 1963, the President, H.C. Nöckler, spoke on behalf of the NSS (Nöckler, 1963). He announced the donation of a mechanical anemometer with a recording drum, the first of its kind in Namibia. This laid the foundation of Gobabeb's core datasets, which steadily built up over the following six decades.

In 1965, the Namib Desert Research Association morphed into the Desert Ecological Research Unit (DERU). The DERU managed the research programme under the aegis of the Transvaal Museum, with secure funding through the CSIR. Research at Gobabeb began to flourish, with entomologist Charles Koch appointed as the first Director. In addition to taxonomic, biogeographic, floristic and faunistic, climatic, microclimatic, and biogeophysical studies, the first ecophysiological research was conducted to understand how Namib Desert organisms coped with water scarcity and heat. This set the stage for desert ecology to take off as Gobabeb's claim to international scientific fame. Some 60 peer-reviewed papers were produced during these early years (ca. 9 peer-reviewed papers per annum).

[1] A 2005 video interview with Dr von Koenen, with updated German and English subtitles may be seen at the link https://vimeo.com/728408797. The interview was conducted by Erich Lübbert's grandson, Conrad Roedern, who kindly gave permission to release the interview.

Building a research platform: 1970–1990

Upon Koch's death in 1970, Mary Seely was appointed director of DERU. Since Charles Koch's 1961 overview of dune life (Koch, 1961), published in the NSS Journal, Gobabeb came to be regarded as a window into the fascinating mysteries of the dunes. As access to Gobabeb was restricted to staff, scientists, and park officials, the station itself became a mystery. Upon public demand, strongly expressed by members of the NSS, annual Open Days were arranged to showcase the research taking place and to lighten the mystery of Gobabeb. Public seminars were hosted in Windhoek by the NSS, and at the coast by the Swakopmund Scientific Society, to provide opportunities for Gobabeb staff and visiting scientists to share their knowledge. They also shared their findings through these societies' newsletters. Gobabeb's broadening visibility attracted documentary filmmakers, engendering worldwide interest in the Namib Desert that continues to the present.

Programmatic and financial commitment by South Africa's CSIR and its successor, the Foundation of Research Development (FRD) served as a springboard for attracting numerous international scientists, postdocs, postgraduate students and interns, building the virtual "critical mass" for science at Gobabeb. A key element of success from then until now was the constant stream of students and interns who became temporary residents at Gobabeb for several months to years. Interns provide the backbone of ongoing projects and conduct own studies for postgraduate qualifications. These "Gobabeb alumni" further spread the word of Gobabeb as a research destination.

Under Mary Seely's directorship, the 1970s and 1980s came to be Gobabeb's "first golden age", as Gobabeb staff and associated scientists and students generated a staggering 490 publications (averaging ca. 23 per annum), mostly on climate, geomorphology, geology, conservation, biodiversity, ecology, ecophysiology, archaeology and palaeontology. Remarkable discoveries were made, exemplified by tenebrionid beetles harvesting atmospheric water through fog-basking and constructing fog catchment sand trenches, and exploiting surface heat through thermal 'dancing' of lizards and spiders using heat to kill prey.

At the end of this phase of Gobabeb's history, the NSS served as a platform for taking stock of its achievements (Seely & Sguazzin, 1992).

Reframing: 1991–1997

Upon Namibia's independence in 1990, previous agreements concerning Gobabeb's management and funding by South African agencies were no longer valid, and a new arrangement was sought for research at Gobabeb to continue. A trust fund was established, managed by a new NGO, the Desert Research Foundation of Namibia (DRFN). The Transvaal Museum donated its library and research equipment to DRFN. Upkeep of the buildings and conservation programmes continued to be supported by the Namibian government

through the Ministry of Environment and Tourism (MET). Despite no formal oversight agreement, Gobabeb continued to operate under dual management by DRFN and MET. Widespread public appreciation of its significance, including by NSS members, buoyed the motivation to continue Gobabeb's research mission. The station's long-term projects continued unabated, and visiting scientists refined previous discoveries and added new ones, resulting in 155 publications (22 per year). Namibian independence also heralded new opportunities for collaboration. International funding enabled Gobabeb to expand its field training programmes. Environmental education became a strong, post-independence priority.

Transforming: 1998–2001

The Gobabeb Trust was established in 1998 when MET and DRFN entered into a Joint Venture Agreement (JVA) concerning the operation of the Gobabeb Training and Research Centre. The NSS participated in the launch ceremony on 28 May 1998. The JVA introduced a new era, uniting the management of all facilities, programmes and relationships under one umbrella and allocating a discrete area within the Namib-Naukluft National Park (NNNP) for non-invasive research operations. Emmanuel Mwenya was appointed as Executive Director in the first four-year development phase, supported by German donor funds. The Southern African Development Community (SADC) designated Gobabeb as its Centre of Excellence for Dryland Environments. Mwenya, who had previously managed the Mashare Agricultural Development Institute in Rundu, introduced new agricultural directions to Gobabeb's portfolio in addition to its existing desert ecology programmes.

Gobabeb maintained its status as a productive research centre, with staff and visiting researchers generating 67 publications (ca.17 per year) during these four years. Gobabeb's research achievements were showcased in the NSS volume celebrating the journal's 75th anniversary (Henschel et al., 2000; Seely et al., 2000).

Developing a self-sustaining platform: 2002–2011

When Mwenya retired in 2002 due to ill health, Joh Henschel was appointed Director of Gobabeb with a mandate to develop its financial sustainability. The first step entailed completing improvements to the infrastructure—renovations, new buildings, a pilot hybrid solar-diesel energy supply and ground-cooling systems—in time for the official inauguration of the new Gobabeb on 9 May 2005. The inauguration was led by Prime Minister Nahas Angula, which also celebrated Mary Seely upon her retirement. A further German donor grant in 2006, and the award of a tourism concession in 2008, supported Gobabeb's efforts to become financially secure without donor support from 2009 onwards.

The financial model envisaged support for Gobabeb's operations through income generated by renting out the Amabilis lecture hall and newly built accommodation to paying clients. This allowed Gobabeb to organise and host international conferences, as well as various fundraising events, well-supported by NSS members. Training programmes, multiplied with field courses and experiential training, were provided to some 2000 students annually. Applied research initiated during Mwenya's time expanded and produced 144 publications between 2002 and 2011 (14 per year), extended across various disciplines.

In 2009, Gobabeb was commissioned to prepare a nomination dossier for the Namib Sand Sea as World Heritage Site. The Namib Sand Sea was subsequently inscribed in 2013 as one of only 21 properties world-wide under all four natural criteria. In celebration of Gobabeb's 50th anniversary, a special issue of the *Journal of Arid Environments* was compiled (Henschel & Lancaster, 2013).

When a new uranium rush commenced in the Namib from 2006 onwards, planning for a Namib Ecological Restoration and Monitoring Unit (NERMU) was initiated and became established at Gobabeb in 2012 in partnership with the Namibian Uranium Institute. Joh Henschel retired as Director in 2011 and is now part of the institution's team of research associates.

Back to its roots: 2012–2022

The last decade of operations at Gobabeb can best be described as a consolidation of the efforts of previous years, with a revival and expansion of its signature strength: research. With the appointment of Gillian Maggs-Kölling as Director in 2013, supported by Theo Wassenaar as Research Coordinator (2011-2017) and Eugene Marais as Research Manager (since 2017), a strategic decision was made to re-evaluate Gobabeb's role and core functions. Its research function was re-elevated to prominence, but without losing sight of the value of education and outreach, which remain firmly embedded within research operations. The training focus shifted to tertiary post-graduate level, where a critical need exists to polish promising young science talent. In 2022, Gobabeb now supports nine MSc and three PhD student associates,[2] who will, upon completion of their tenure, join the Namibian workforce as young science professionals. Research output is high with 317 peer-reviewed papers published during the past decade (32.y-1).

Following a review in 2017, the operating framework for Gobabeb was revised as a research collaboration agreement between the Gobabeb Trust and the Ministry of Environment Forestry and Tourism (MEFT). This arrangement allows continued access to the facilities in the NNNP for the operations of Gobabeb–Namib Research Institute for the foreseeable future.

[2] https://gobabeb.org/research/student-research-profiles

Despite a long and mutually supportive partnership over many decades, Gobabeb and the NSS only signed a formal MoU on 05 December 2017. The main purpose of this agreement was to formalise the sharing of scientific information and promoting scientific engagement with the general public. Successful field excursions to Gobabeb for NSS members were organised in 2017 and 2019. In 2021, the NSS facilitated the participation of Prof. Eric Holm on the biannual excursion, who shared reminiscences from his tenure as the first, full-time technical scientific assistant at Gobabeb in 1968. These recent joint activities reaffirm the potential benefit for both Gobabeb and NSS, particularly in sharing scientific information and the nurturing of scientific curiosity amongst the Namibian public.

Onward and upward into the future

After weathering two years of the COVID-19 pandemic, stringent *modus operandi* of frugality and flexibility again emphasised that the future of Gobabeb depends on three key and interdependent factors:

1. Financing and sustainability
2. Maintaining science outputs that are relevant and address a range of stakeholder needs
3. Strengthening and expanding Gobabeb's science network.

Sustainability remains a perennial challenge, and the future of Gobabeb will always hinge on a reliable funding stream. The challenge to secure core funding, as well as diversified income, is integral to the governance structure of the Gobabeb Trust and has to be addressed collectively as a primary goal in the immediate future. Although not an element of the MoU with NSS, joint fund-raising activities and possibly corporate investment through NSS membership may be one avenue towards a more secure financial future.

Funds sourced through competitive grants will continue to drive research operations. Gobabeb's scientific horizons have expanded by introducing increasingly sophisticated techniques and technologies. The application of tools like phylogenomics and big data analysis will allow for a deeper analysis of evolutionary patterns in the Namib. Tools like drones and acoustic monitoring allow for rapid, non-destructive data gathering, opening up new opportunities in ecological assessments. Coupled with consideration of evolving user needs, the continued relevance of Gobabeb's research activities will be ensured. Planned infrastructure expansion will allow for a larger postgraduate intake on-site, enabling a range of longer-term research studies, and concurrently accelerating the development of science talent for the future. The NSS partnership will persist as a prominent conduit for the sharing of research information to the general public.

Faster access to online resources and reliable internet connectivity to communicate with colleagues worldwide will overcome some of the challenges of operating in a remote location. With an expansion of information-sharing, ongoing development of Gobabeb's

web and social media presence[3], and the NSS connection and promotion of citizen science, Gobabeb's network is anticipated to diversify and grow, as per the current trajectory. Methods for scholarly communication and learning have changed with the massive developments in Information Technology, and opportunities for extending the reach of research must be explored in order for Gobabeb to remain relevant in an increasingly complex, socially-networked global culture.

Conclusion

From a visionary idea and the grit to make it happen, to the tenacious commitment and responsiveness to change that has underpinned the continuation of Namib Desert science over six decades, Gobabeb has a proven track-record and global recognition as one of the world's oldest arid lands field research stations. It stands as a beacon of scientific endeavour and is poised to continue this legacy into the future.

> '*Those of us who remain to watch the light which shines from the tower in the Namib will do so with feelings of deep sympathy and concern, trusting that in an uncertain and changing world it will stand and hold fast to the aims of its founders*'
> (Lawrence, 1977).

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Over the years, numerous individuals and organisations, including a host of benefactors, were involved in developing Gobabeb–Namib Research Institute. The achievements were only possible thanks to assiduous teamwork involving many people, often provided selflessly and without acclaim, at local, national and international levels. This paper is dedicated to Mary Seely for her devotion to Gobabeb and its partnership with the Namibia Scientific Society.

References

ANONYMOUS, 1959. Field Expedition to the Namib Desert. *Bulletin of the Transvaal Museum* No. 3, July 1959: 2.

BRAIN, C.K. 1990. Twenty-five years of Namib Desert research: a personal perspective. *Namib ecology 25 years of Namib research.* 1st ed. Pretoria: Transvaal Museum.

[3] https://gobabeb.org

FITZSIMONS, V. 1961. The Namib Desert Research Station. *J. S.W.A. Scientific Society,* 15, 71–72.

HENSCHEL, J.R. & LANCASTER, N. 2013. Gobabeb–50 years of Namib Desert research. *Journal of Arid Environments,* 93, 1–6.

HENSCHEL, J.R., SEELY, M.K. & ZEIDLER, J. 2000. Long-term ecological research at Gobabeb: gaining and applying knowledge about a highly variable environment. *Journal of the Namibia Scientific Society,* 48, 89–114.

KOCH, C. 1961. Some aspects of abundant life in the vegetationless sand of the Namib Desert dunes. *Journal S.W.A. Scientific Society,* 15, 9–34.

LAWRENCE, R.F. 1960. The Namib Desert Biological Station. *South African Journal of Science,* 56, 90.

LAWRENCE, R.F. 1977. A history of the Namib Desert Research Station to 1970. *Namib Bulletin,* 3–5.

NÖCKLER, H.C. 1963. Zur Einweihung der Wüstenforschungsstation Gobabeb. *Bulletin.* Swakopmund: Society for Scientific Development.

SEELY, M.K. 1979. Ecology of a living desert: twenty years of research in the Namib. *South African Journal of Science,* 75, 298–303.

SEELY, M.K. 1990. The Desert Ecological Research Unit of Namibia: current status of ecological research in the Namib. *Namib ecology 25 years of Namib research.* 1st ed. Pretoria: Transvaal Museum.

SEELY, M.K., HENSCHEL, J.R., ZEIDLER, J. & SHANYENGANA, E.S. 2000. Namib research: its development at Gobabeb and implications for Namibia. *Journal of the Namibia Scientific Society,* 48, 62–88.

SEELY, M.K. & SGUAZZIN, T.M. 1992. Gobabeb: arid zone research in Namibia. *Journal of the Namibian Scientific Society,* 43, 133–145.

VON KOENEN, E. 2009. Die Anfänge von Gobabeb über die Pionierzeit 1961–63. *In:* ROEDERN, C. (ed.). Windhoek: Solar Age Namibia.

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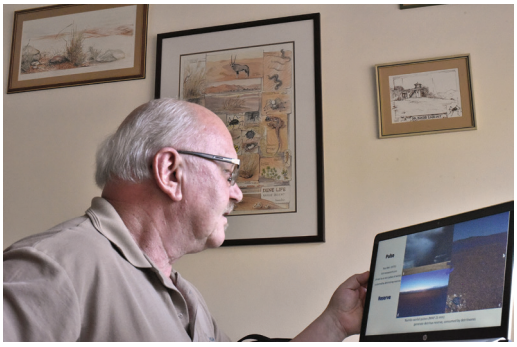

Joh Henschel has 45 years of experience as desert ecologist, starting at Gobabeb–Namib Research Institute as intern in 1977, postdoc 1986, research coordinator 1996, and executive director 2002–2011, then managed the Arid Lands Node of the South African Environmental Observation Network until his retirement in 2020. He has published 135 scientific papers and book chapters and over 230 popular science articles. His current projects include Namib tenebrionid beetle population dynamics, diversity, reproduction and ecophysiology, the ecology of the Namib dune field and fairy circles, the ecology of Karoo brown locusts and the Kimberley tri-biome programme. He currently lives in the Western Cape, South Africa.

Gillian Maggs-Kölling

Gillian is currently the Executive Director of Gobabeb, employed in this capacity since 2013. She previously headed the National Botanical Research Institute for 23 years, and served three years as responsible official for the research portfolio within the Directorate of Forestry. With her botanical background, the Namib flora is a special interest; she is particularly passionate about arid-adapted melon taxa. She is inspired by those individuals, past and present, whose combined legacy lives on in this unique research facility, and the breath-taking awe-someness of the Namib Desert.

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