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1952

Alain Bombard

1924–2005

Fighting for the sea

Alain Bombard was a junior doctor at a hospital in Boulogne, France, when a trawler sank in bad weather outside the harbour and 43 bodies were brought in. Unable to revive a single one, the 27-year-old determined to give hope to people who feared shipwreck at sea. Becoming a researcher at Monaco's Oceanographic Institute, and after experiments in the English Channel and the Mediterranean, in 1952 Bombard cast off into the Atlantic in a 15 foot inflatable zodiac dinghy called *L'Hérétique*. Living on fish, plankton, rainwater and controlled drinking of seawater, Bombard managed to survive for 62 days. He touched land in Barbados, suffering from exhaustion, diarrhoea and weight loss, having travelled 4,400 km. He had lost 25 kg and was immediately hospitalised. But Bombard returned to France a hero. His book *Naufragé Volontaire* (translated into English as *The Bombard Story*) made him world-famous.

In the years that followed, Bombard directed a marine laboratory in Saint Malo for the study of the physiopathology of the sea, monitoring the coastal environment of north-west France.

In 1974 Bombard joined Paul-Emile Victor in setting up a pressure group for 'la défense de l'homme et de son environnement' and two years later was one of those who signed the Ecoropa document *For an Economy which Respects the Earth and Man*.

In May 1981, Bombard became Secretary of State at the Ministry for the Environment in the government of Prime Minister Pierre Mauroy. He lasted little more than a month in office, his uncompromising pronouncements against hunting having alienated many in high places. In the same year, he was elected to the European Parliament. There, until 1994, he was a formidable agitator on environmental issues, ranging from nuclear power to the culling of baby seals. His outspoken opposition to the French practice of force-feeding geese for pâté de foie gras earned him and his family death threats.

“ I had fought on behalf of man against the sea, but I realised that it had become more urgent to fight on behalf of the sea against men. ”



Alain Bombard, *The Bombard Story* (London: Grafton, new edn 1986)

1953

Eugene Odum

1913–2002

The father of modern ecology

In 1951, the US Atomic Energy Commission wanted to see what effect its Savannah River site in South Carolina would have on nearby plants and animals. To carry out the investigation they chose a biologist from the University of Georgia. His name was Eugene Odum. Finding himself with one of the largest self-contained laboratories on Earth – some 777 km² of property off-limits to the public, Odum helped set up research projects at the site. Earlier, he had been on a faculty committee drawing up a curriculum of required courses for biology majors. When he suggested that ecology should be a required course,



he was ridiculed. At this time, ecology had not yet been defined as a separate discipline. In Odum's view, even professional biologists seemed generally ignorant of how the Earth's ecological systems interact with one another.

With the Savannah River site as his laboratory, Odum began to address this problem. He realised there was no single book that examined the entire ecosystem. So, with his brother Howard, then a graduate student at Yale, Odum set about writing his pioneering tome. First published in 1953, *Fundamentals of Ecology* would remain the only textbook in the field for at least a decade. It was translated into 12 languages and influenced an entire generation of ecologists.

By 1970, when the first Earth Day was organised, Odum's concept of the living Earth as a global set of interlaced ecosystems had become one of the key pillars of the environmental movement. Only a few weeks before his death in 2002 at 89, Odum was updating his landmark book, now in its fifth edition.

“ Without healthy, natural systems to support and buffer industrial, urban and agricultural activities, there can be no healthy economy or high quality of life. ”



www.ecology.uga.edu



Eugene Odum and Gary W. Barrett, *Fundamentals of Ecology* (Belmont, CA: Brooks/Cole, new edn 2004)

1953

Kai Curry-Lindahl

1917–1990

A Swedish migrant

While Europe was embroiled in the Second World War, a young Swedish zoologist called Kai Curry-Lindahl was editing the Swedish Society for the Protection of Nature's journal *Sveriges Nature*. In 1953 he was appointed director of the Department of Natural History at the Nordic Museum in Stockholm. While holding this post Curry-Lindahl frequently took leave to participate in various zoological–ecological expeditions.

As travel between sub-arctic Swedish Lapland and Africa's tropical Congo is a normal part of the life-cycle of certain trans-equatorial migratory birds, Curry-Lindahl was obliged to adopt a similar lifestyle, commuting between the freezing north and the sweltering equator. He became actively concerned with the preservation of natural areas, with contributing to the understanding and solution of environmental problems, with land use planning, and with the whole complex network of human interactions with the environment. From 1966 to 1972, he was vice-chairman of the International Commission on National Parks. During this time, he wrote three books: *The Global Role of National Parks for the World of Tomorrow*; *Three Parks in Swedish Lapland*; and *Conservation for Survival*. He also served as special consultant to UNESCO for the Intergovernmental Conference of Experts on the Scientific Basis for Rational Use and Conservation of the Resources of the Biosphere.

In 1982 Kai Curry-Lindahl's seminal *Bird Migration in Africa: Movements between Six Continents* was published. When he died in Nairobi, while serving as a senior adviser to the UN Environment Programme, this Swedish environmentalist had authored 57 books.

“ In the overcrowded world of today nature cannot any longer defend itself by remoteness or inaccessibility. Therefore the establishment of national parks and equivalent nature reserves is the only means to give maximum protection to what remains of representative natural habitats, biomes and ecosystems as well as rare and threatened species. However, this is not enough. So many significant habitats and ecosystems have disappeared or been greatly modified through human disturbance that it is necessary to undertake restoration programmes in order to regain for man's benefit what he unwisely has destroyed. ”



www.waterbirds.org/kai.htm



Kai Curry-Lindahl, *Conservation for Survival*
(London: Gollancz, 1972)

1954

Scott Nearing

1883–1983

Helen Nearing

1904–1995

Living the good life

In the autumn of 1932, at the height of the Great Depression, Scott Nearing, a 50-year-old pacifist and anarchist who had lost his job as a college professor because of his beliefs, together with his 28-year-old wife Helen, decided to move from their small apartment in New York City to a dilapidated farmhouse and leaking barn, set on 26 hectares at the foot of Stratton mountain in the state of Vermont.

Neither Scott nor Helen, a trained musician, knew anything about subsistence farming. Nevertheless, they paid \$300 cash and signed up for an \$800 mortgage. Initially, they followed the example of their neighbours, planting traditional crops at the traditional times, but later experimented with greenhouses (virtually unknown in the area despite only 100 frost-free days a year) and also adopted some innovations in preparing maple syrup and maple sugar from their tapped maple trees – their cash crop – rejecting fertilisers and pesticides for an organic approach. For 20 years, the Nearings lived simply and sustainably on the land. Their philosophy was to create a lifestyle giving importance to work, on the one hand, and to contemplation or play on the other. Ideally, they aimed at a pattern that divided waking hours into three blocks of four hours: ‘bread labour’ (work directed towards meeting basic needs such as food, shelter and clothing); civic work (doing something of value for their community); and professional pursuits or recreation.

In 1952 they moved to Forest Farm on the coast of Maine where they continued their way of life. Two years later they wrote a book *Living the Good Life: How to Live Sanely and Simply in a Troubled World*. The book was a major spur to the US back-to-the-land movement that began in the late 1960s, selling some 250,000 copies.

During the following years a steady stream of anti-war back-to-the-landers visited the Nearings. Eugene V. Debs, the five-times socialist presidential candidate, called Scott the ‘greatest teacher in the United States’. Scott Nearing died 18 days after his 100th birthday while Helen lived until she was 91.

“ Do the best that you can in the place where you are, and be kind. ”



www.goodlife.org



S. Nearing and H. Nearing, *The Good Life*
(New York: Schocken Books, 1990)

1954

Irenäus Eibl-Eibesfeldt

1928–

In honour of Darwin

In 1954, Irenäus Eibl-Eibesfeldt, a 26-year-old Austrian ethologist and experienced diver from the Max Planck Institute in Germany, landed in the Galapagos Islands while on a scientific cruise in the Caribbean. He was fascinated by the wildlife but saw cause for alarm about the chances of the ecosystem's survival against invasive species and human impacts. Giant tortoises were being slaughtered for food and their young sold as pets. Sea lions were killed for sport. The fearless native birds were stoned for fun while introduced domestic animals had run wild and were destroying the unique fauna and flora.

Eibl-Eibesfeldt raised the issue with the then recently formed International Union for the Conservation of Nature and Natural Resources (IUCN) (now the World Conservation Union) and also with the Ecuadorean government. His appeal gained many sympathisers and they began campaigning for a biological research station to be established on the islands. Several distinguished scientists in Europe and the Americas joined with them, including **Julian Huxley**, **Roger Heim**, **S. Dillon Ripley**, **Jean Delacour** and **Misael Acosta-Solis**. Meanwhile, Eibl-Eibesfeldt gained the backing of UNESCO to return to the Galapagos for four months during 1957 and survey the animal populations while searching for an appropriate site for the station. 114 93

Delacour and Ripley, on behalf of the International Council for Bird Preservation, gained approval from the Ecuadorean government to establish a research station. This was the base from which, in July 1959, the Charles Darwin Foundation for the Galapagos Islands – independent, international and non-governmental – was founded and the Charles Darwin Research Station was established at Puerto Ayora on Santa Cruz Island. Coincidentally, this was the centenary year of the publication of **Darwin's** major work *On the Origin of Species by Means of Natural Selection*. The following year, Eibl-Eibesfeldt's book *Galapagos: Noah's Ark in the Pacific* was published. 34

Today, the Charles Darwin Foundation has been carrying out crucial scientific research for almost 50 years, but the islands remain threatened. The rapid growth of tourism and immigration to the islands led to a UNESCO decision in June, 2007 to include the Galapagos on its List of World Heritage in Danger, reinforcing the April 2007 decision of the government of Ecuador to declare Galapagos at risk and as a national priority for conservation.



www.darwinfoundation.org



I. Eibl-Eibesfeldt, *Galapagos: The Noah's Ark of the Pacific*
(New York: Doubleday, 1961)

1956

Wladyslaw Szafer

1886–1970

Protecting Poland's plantlife

From 1917 a Polish botanist called Wladyslaw Szafer was a professor at the Jagiellonski University in Kraków. During the 1920s, Szafer led the movement which, in 1932, culminated in the establishment of a national park in the forest of Bialowieza. In turn, this also helped to protect the European bison from extinction. Part of Szafer's campaign involved the publishing and editing of Poland's first nature conservation journal, *Ochrona Przyrody*. From 1936 to 1938, now promoted to university president, Szafer continued to campaign for the protection of Poland's wilderness.

In 1956, the scientific secretariat of the Polish Academy of Sciences established the Department of Botany as an independent, national, scientific institute. Szafer built the department into a prominent research centre specialising in systematics, plant geography and palaeobotany. As the institute grew, additional disciplines were included, such as environmental ecology and ecological monitoring. By the 1960s the Kraków Institute of Botany employed more than 70 staff and Szafer was internationally recognised.

In 1986, 16 years after his death, the Kraków University Institute was renamed the Wladyslaw Szafer Institute of Botany in honour of Poland's pioneer conservationist.

1956

Frank Fraser Darling

1903–1979

The ecological survey

Living at Dundonnell, and later in the Summer Isles in the Scottish Highlands, the Englishman Frank Fraser Darling began the work that was to be his legacy. He described the social and breeding behaviour of red deer (*Cervus elaphus*), sea birds and the grey seal (*Halichoerus grypus*) respectively in three academic works: *A Herd of Red Deer*, *Bird Flocks and the Breeding Cycle* and *A Naturalist on Rona*. His work marked a shift towards what was to become field survey – or 'human ecology' as he called it – integrating the disciplines of zoology and genetics with those of natural history and conservation. This work brought him to the attention of the natural his-

114 torian Sir Julian Huxley.

Between 1939 and 1943 Darling brought derelict land back into agricultural production on Tanera Mor in the Summer Isles. In 1942 the wartime Secretary of State for Scotland, Tom Johnston, asked Darling if he would run an agricultural advisory programme in the crofting areas of the Scottish Highlands and Islands. He agreed and for two years he travelled, taught and wrote articles that were later published in book form as *Crofting Agriculture*.

During the early 1950s, Darling left Scotland to study human ecology in other parts of the world. He assessed the impact of the introduction of Siberian reindeer on native caribou populations and its consequences for the Eskimo population. From 1956 to 1961 he toured Uganda, Kenya, Tanzania and the Sudan. He travelled on foot, by Land Rover and by air in the wet and dry seasons. His holistic overview of complex ecosystems was augmented by the advice of experts in the field. His conclusions encompassed issues as diverse as tribal law, game management, game hunting (which he condemned as vandalism), animal husbandry, flora and colonial politics.

In 1956 Darling published *Pelican in the Wilderness: Odyssey of a Naturalist*. It was a sharp critique of the abuse of nature by man. To Darling, science's purpose was to discover the principles that underlie the complexity of nature in its widest sense.

“ There can be no greater moral obligation in the environmental field than to ease out the living space and replace dereliction by beauty. ”

1956

Margaret Mee

1909–1988

The disappearing flowers of the Amazon

In 1952, Greville Mee and his wife Margaret arrived in São Paulo, Brazil. Having trained as an artist at St Martin's School of Art, Margaret soon obtained a job teaching at St Paul's, São Paulo's British school. Fascinated by the exuberance of the Atlantic forest, she began painting the plants and flowers she found on local expeditions.

Gradually, her expeditions penetrated deeper and deeper into the Brazilian jungle. In 1956, she went on a painting expedition up the Amazon River and its various tributaries, collecting and painting plants in the wild. She was to make 14 further forays, each time heading up the river with a small boat either by herself or with only a local pilot for companionship. The expeditions weren't without hardship. Mee contracted malaria and hepatitis, nearly drowned on several occasions, suffered broken ribs in an accident, and encountered hostile Indians and threatening gold prospectors. She packed a .32 revolver along with her paints and brushes.

Her innate talent for botanical illustration was soon recognised and, in 1962, Mee was invited by the São Paulo Botanical Institute to illustrate the section on bromeliads for *Flora Brasílica*, an extraordinarily ambitious documentary project to catalogue and illustrate the plants of Brazil. But, with each expedition, Mee witnessed the disappearance of more forest habitat and this led her to start protesting at the forest policies of Brazil's military dictatorship.

Moving to Rio de Janeiro in 1968, Mee continued her Amazon trips, forever searching out new flowers and plants to paint. She had long wanted to paint the Amazonian moonflower (*Selenicereus witti*) which only flowers on one night of the year by moonlight under the right conditions. A special expedition – her fifteenth and last – was mounted in May 1998, the month of her 79th birthday, and she was successful in witnessing and drawing the blooms for the first time.

Later that year, she made a trip to England for an exhibition of her paintings at the Royal Botanic Gardens at Kew, while taking the opportunity to call international attention to the destruction of the Amazonian forests. Her book *In Search of Flowers of the Amazon Forests* was a vivid visual testimony to the magnificence of the plantlife under threat.

Mee died in November 1988, but left behind 400 folios of gouache illustrations, 40 sketchbooks and 15 diaries. Her mission has continued after her death. The Margaret Mee Amazon Trust exists to preserve her paintings for posterity and to provide scholarships for Brazilian scientists to conduct field research in Brazil. Botanical illustrators are funded by the Brazilian Fundação Botânica Margaret Mee.



Margaret Mee in the garden of her home in Santa Teresa, Rio de Janeiro, 1988. Aged 78, she was preparing to make her final Amazon journey.

“ I know my death will not be the end of my work. Wherever I go I will try to influence those who are destroying our planet, so the Earth will have a chance to survive. ”



www.margaretmee.org.br



Margaret Mee, *Margaret Mee's Amazon: The Diaries of an Artist Explorer* (Woodbridge, Suffolk, UK: Antique Collectors Club, 2004)

1957

Ian L. McHarg

1920–2001

Designing with nature

In the autumn of 1957, Ian McHarg, the Glasgow-born professor of landscape architecture and city planning at the University of Pennsylvania, introduced a new course which he called Man and Environment. In the years that followed, some 3,000–4,000 students were to be influenced by his groundbreaking approach. McHarg further promoted his ideas in the 1969 book *Design with Nature*, which essentially gives step-by-step instructions on how to break down a region into its appropriate uses. It would sell some 155,000 copies and pioneered the concept of ecological planning. It continues to be one of the most widely celebrated books on landscape architecture and land-use planning, and its ideas have been taken up throughout the world.

In 1996 McHarg published his autobiography, *A Quest for Life*. Besides writing he was also involved in many important design projects: the 1962 plan for the valleys in Baltimore County, Maryland; the inner harbour in Baltimore; the woodlands in Houston, Texas; and regional plans for the twin cities of Minnesota, Washington DC and Denver, Colorado.

“ Our eyes do not divide us from the world, but unite us with it. Let this be known to be true. Let us then abandon the simplicity of separation and give unity its due. Let us abandon the self mutilation which has been our way and give expression to the potential harmony of man–nature. ”



Ian McHarg, *Design with Nature* (New York: John Wiley, 1995)

1958

William O. Douglas

1898–1980

Judge Bill

One of the most spectacular features of the Olympic National Park near Los Angeles is its 96 km of Pacific coastline. In 1957 the Park's superintendent and local chamber of commerce were planning a controversial road through this area of natural beauty which would have involved much tree felling.

To the rescue came US Supreme Court Associate Justice William O. Douglas who was then 60 years old. At a time when American youth proclaimed you could

not trust anyone over 30, 'Judge Bill' was becoming a political hero on college campuses. In 1954 he had organised a 189 mile hike along the Chesapeake and Ohio Canal towpath to protest against a proposed highway in the area. He inspired the effort to establish the area as a national park, going as far as to challenge the editorial board of the *Washington Post* to go with him for a walk along the canal after it had published opinions supporting a Congressional plan to pave the canal into a road; the board subsequently changed its stance.

To protect the Pacific coastline, in 1958, Douglas organised a second hike by a coalition of environmental groups along the secluded and pristine beach; plans for the road were soon abandoned.


During the 1960s, Douglas became a spokesman for many liberal causes, writing a book published in 1969 entitled *Points of Rebellion* and controversially authoring a piece for 'hippie' publication *Evergreen* magazine. Douglas also became a key supporter of the fledgling environmental movement, serving on the board of directors of the Sierra Club from 1960 to 1962 and writing prolifically on his love of the outdoors.

In 1972, he eloquently dissented from the Supreme Court's decision in *Sierra Club v. Morton* that denied the environmental group 'standing to sue' to block a permit given by the US Forest Service to develop a valley near Sequoia National Park. Douglas asserted that environmental groups should have the right to legally represent natural resources and argue on their behalf. The Sierra Club lost the *Morton* battle but, thanks to Douglas, won the war. Today, any environmental group seeking to assert standing and take legal action in a natural resource matter simply has to find among its membership a single person with a particular interest (e.g. one who hikes, hunts, fishes or camps in or near the affected area)

Douglas is also credited with preserving the Red River Gorge in eastern Kentucky. When a proposal to build a dam and flood the gorge reached the Supreme Court, Douglas visited the area himself and the Red River Gorge's Douglas Trail is now named in his honour.

The William O. Douglas Wilderness in Washington state honours him for his role in federal wilderness legislation, as well as his dedication and love for the Cougar Lakes region (now part of that wilderness).

“ A conservation park is not a playground. It is not an amusement centre. The Disneyland approach is at war with the idea of conservation parks. Those who want to play tennis or basketball or practice on bars need a gymnasium or a stadium . . . The conservation park should return man to the environment from which he came. ”

 J. O'Fallon (ed.), *Nature's Justice: Writings of William O. Douglas* (Corvallis, OR: Oregon State University Press, 2000)

1958

Charles David Keeling

1928–2005

First evidence of the greenhouse effect

During the early 1950s, Roger Revelle, Director of the Scripps Institution of Oceanography in San Diego, became concerned about increased levels of atmospheric carbon dioxide (CO₂) from the use of fossil fuels. Like other scientists, Revelle was unsure why CO₂ levels fluctuated and varied with location. So, in 1956, he recruited a brilliant 28-year-old postdoctoral fellow in geochemistry at Caltech called Dave Keeling as a researcher.

Keeling developed the manometer – the first instrument to measure CO₂ in atmospheric samples. He camped at Big Sur on the Californian coast where he used his new device to measure the level of CO₂ and found it had risen to 315 parts per million (ppm) in the atmosphere, 12 per cent more than the 280 ppm that ice-core samples had shown was the level before the Industrial Revolution – before man's extensive burning of coal, oil and other fossil fuels that spew out carbon dioxide. Working out that measurements of background (long-term) CO₂ could be recorded on mountain tops, Keeling persuaded the US government to fund a research station in Hawaii, far from industrial influences. A CO₂ monitoring machine was set up in 1958 at the Mauna Loa Observatory, on top of a Hawaiian volcano.

By 1960, Keeling had demonstrated strong seasonal variations in CO₂ levels, with peaks reached in late winter in the northern hemisphere followed by reductions in spring and early summer as plant growth increases and CO₂ is absorbed. In 1961, Keeling produced data showing that CO₂ levels were rising steadily, in what became known as the 'Keeling curve'. This was the first indication of the greenhouse effect.

The data collection started by Keeling and continued at Mauna Loa is now the longest continuous record of atmospheric CO₂ in the world and is considered a reliable indicator of the global trend. Keeling's research shows that the atmospheric concentration of CO₂ has grown from 315 ppm in 1958 to 380 ppm in 2005, with the increase linked to fossil fuel emissions.

Appointed professor of oceanography in 1968, Keeling spent his entire 50-year career at Scripps. Author of over 100 research articles, he was co-convenor of two international conferences on ocean and atmospheric CO₂. He also constructed a model of the carbon cycle into which future man-made CO₂ could be introduced to predict the concentration level in air and water well into the 21st century.

Having received numerous international awards, it is perhaps ironic that climate change sceptic President George Bush selected Keeling to receive the National Medal of Science in 2002, the highest US award for lifetime achievement in scientific research.

“ It is possible that this is merely a reflection of natural events like previous peaks in the rate, but it is also possible that it is the beginning of a natural process unprecedented in the record. ”

 scrippsco2.ucsd.edu/home/index.php

1959

Bernhard Grzimek

1909–1987

Serengeti Shall Not Die

At the end of the Second World War, Bernhard Grzimek took over the ruins of the Frankfurt zoo in defeated Germany. Following the sustained bombing there were only a few animals left alive among the wreckage. But, before long, the determined Grzimek had persuaded the occupying Allied Forces to help with feeding and rehousing the animals.

At the beginning of the 1950s Grzimek headed to Africa looking for animals to repopulate his zoo. He also wanted to study and film the lives of wild animals in their natural habitats in order to improve their conditions in captivity. In 1956 his book *No Room for Wild Animals* became a bestseller. With its profits, and those of a film version, Grzimek offered to help the Tanzania National Parks Service buy more land to add to the Serengeti National Park. But the Tanzanian parks director had another suggestion: why not fund a survey to map the movement of the great herds as they migrate across the Serengeti? Only if they knew where these animals went could they draw up sensible boundaries for the park.

Grzimek rose to the challenge. At the age of 48 he and his 23-year-old son Michael learned to fly, bought a light aircraft, and flew the 6,400 km from Frankfurt to the Serengeti. Over the next two years, the Grzimeks pursued their airborne task of counting and mapping the migration routes of huge herds such as wildebeest. They also made a film about their work, with cameraman Alan Root. *Serengeti Shall Not Die* was released in 1959 and won an Oscar that year for best documentary feature film.

“ Palaces can be rebuilt if they are destroyed in wartime, but once the wild animals of the Serengeti are exterminated no power on Earth can bring them back. ”

 www.serengeti.org

1959

Frank Craighead

1916–2001

John Craighead

1916–

Tracking the grizzly bear

Until the 1950s, little was known about the grizzly bear (*Ursus arctos horribilis*). The animals were feared and had been slaughtered almost to the point of extinction in most of the US. One of the few places left with a viable population was Yellowstone National Park.



Grizzly bears

In 1959, twin brothers, John and Frank Craighead, well known for their knowledge of falconry, were invited to Yellowstone to conduct the first scientific investigation of grizzly bears. Over the next 12 years, the Craighead twins courageously outfitted 29 bears with radio collars and followed them

for the next year. At first, the brothers used relatively primitive radio receivers but later developed satellite telemetry for the task. They documented what the bears ate, how they bonded and their territorial range, eventually showing that Yellowstone grizzlies roamed far beyond the park's boundaries.

In the course of their research, the brothers became advocates for the bears. When park officials decided to close the rubbish dumps where the grizzlies had congregated each spring to feed, the Craigheads warned them that the bears would either find new feeding areas beyond the park or die. The dumps had, in fact, become part of the grizzlies' ecosystem. When the park went ahead with the closure in 1967, the Craigheads' relationship with the Yellowstone administration deteriorated.

The twins finally gave up their study in 1971 after refusing a demand by the park service to edit their findings before they were made public. They claimed that more grizzlies than ever were being killed and Frank accused the park of covering up the deaths.

The Craigheads experienced partial vindication in 1975 when the grizzly bear came under the protection of the Endangered Species Act. Their pioneering research

not only appeared in *National Geographic*, but also in a book, *Track of the Grizzly*, published in 1979. Their work helped to save the grizzly from extinction in the lower 48 states of the US. Today, the big bear remains threatened, although its numbers appear to have stabilised. In Frank's words:

“ Alive, the grizzly is a symbol of freedom and understanding – a sign that man can learn to conserve what is left of the Earth. Extinct, it will be another fading testimony to things man should have learned more about but was too preoccupied with himself to notice. In its beleaguered condition, it is above all a symbol of what man is doing to the entire planet. ”



www.grizzlybear.org



F.C. Craighead Jr, *Track of the Grizzly* (San Francisco: Sierra Club Books, 1982)

1959

Raymond Dasmann

1919–2002

Environmental conservationist

During the late 1950s, Raymond Dasmann, who trained as a field biologist at the University of California at Berkeley, was studying deer populations in northern California. Despite convincing data that predicted a population crash unless the number of deer was reduced (the population was growing far faster than their range could support), preferably by liberalising hunting regulations, Dasmann and his colleagues were unable to build the necessary support among deer hunters who believed a doe hunt would lead to extinction. As a result, the deer population did indeed crash in the mid-1960s.

By that time, Dasmann had published his first books. *The Destruction of California* was a call to action that became a staple text of US university ecology courses in the 1970s. His textbook *Environmental Conservation*, originally issued in 1959, would go into five editions. He fought for the title with the publisher at a time when the phrase was unknown.

In the years that followed, Dasmann's work took him to Africa, Sri Lanka and the Caribbean. His pioneering work on game ranching in Africa fostered the new field of eco-development and helped make ecotourism the multi-million-dollar industry it is today. While working with UNESCO he helped launch the Man and



Biosphere programme. He is also (along with Peter Berg) credited with the concept of 'bioregionalism', which opposes a homogeneous economy and a consumer culture that ignores its dependency on the natural world. Bioregionalism argues for the use of local food and materials, the cultivation of native plant species and living in a sustainable way.

“ The Earth is the only known nature reserve in the entire universe. ”



Raymond F. Dasmann, *Called by the Wild: The Autobiography of a Conservationist* (Berkeley, CA: University of California Press, 2002)

1959

Gerald Durrell

1925–1995

My Family and Other Animals

In 1945, at the age of 20, Gerald ('Gerry') Durrell became a junior keeper at Whipnade Zoo in Bedfordshire, England. During his teens, Durrell's family had lived on the island of Corfu where Durrell was home-schooled in zoology and kept a large number of wild animals as pets.

A year later, financed by an inheritance, Durrell began animal-collecting expeditions for British zoos, to the British Cameroons (now Cameroon) in 1947 and to British Guiana (now Guyana) in 1949, followed by half a dozen other countries. During these forays, he witnessed the loss of habitat that was threatening many animal species with extinction. Soon, Durrell became noted for his efforts in animal conservation. He came to believe that only a private zoo would allow him 'to create a sanctuary in which we could establish colonies of these threatened species so that, even if they become extinct in the wild state, they would not vanish forever'.

In 1956, his book *My Family and Other Animals*, based on his time in Corfu, became a bestseller and enabled him to realise his dream. Three years later, he acquired Les Augres Manor on Jersey in the Channel Islands where he created the Jersey Zoological Park. Five years later, he founded the Jersey Wildlife Preservation Trust.

Today, despite its lack of large, crowd-pleasing animals and its relatively out-of-the-way location, the zoo reports more than 250,000 visitors annually. It has some 1,900 birds, fish and other animals, comprising 190 species. Jersey was the first zoo to house only endangered breeding species and is a pioneer in the field of captive breeding.

“ The great ecosystems are like complex tapestries – a million complicated threads, interwoven, make up the whole picture. Nature can cope with

small rents in the fabric; it can even, after a time, cope with major disasters like floods, fires and earthquakes. What nature cannot cope with is the steady undermining of its fabric by the activities of man. ”



www.durrellwildlife.org



Gerald Durrell, *My Family and Other Animals*
(London: Penguin, 2004 edn)

1959

George Schaller

1933–

The year of the gorilla

In the 1956, German-born George B. Schaller, a graduate in zoology and anthropology from the University of Alaska, took part in a biological survey of a little-known region in north-eastern Alaska. This work indirectly led to the creation of the Arctic National Wildlife Refuge.

In 1959, sponsored by the New York Zoological Society, Schaller had turned his attention to the mountain gorilla of the Virunga Volcanoes in Central Africa. He spent two years in close intimacy with the mountain gorillas and, together with later work by **Dian Fossey**, was instrumental in dispelling the public perception of gorillas as brutes by demonstrably establishing the deep compassion and social intelligence evident among them and how some traits of their behaviour parallel those of humans. His book, *The Mountain Gorilla: Ecology and Behaviour*, published in 1963, drew considerable attention. Schaller later recounted his experiences in *The Year of the Gorilla*.

After working in India for two years on tigers and their prey, Schaller moved with his wife and two small children to the Serengeti National Park in Tanzania, spending over three years studying lions and their prey. His book *The Serengeti Lion* won the National Book Award in 1973

In 1970, Schaller conducted research in Pakistan on the snow leopard, wild sheep and goats. This work led to the setting up of Khunjerab National Park in the Karakoram Mountains. He went on to work on jaguars and other wildlife in Brazil in the late 1970s.

From 1980, Schaller began the first-ever intensive research programme on wild giant panda ecology and behaviour, carried out for WWF in collaboration with Chinese scientists. The purpose of the project was to obtain basic life history information – social life, extent of travel, habitat requirements – to enable better conservation efforts. The resultant research – detailed in the book *The Last Panda* – revealed that these creatures, originally carnivores, have undergone an unusual evolution-



ary change to a diet of difficult-to-digest bamboo. His breakthroughs in the study of panda ecology and behaviour formed the basis of giant panda conservation knowledge for years to come.

During the 1990s, Schaller, now in his sixties, continued his conservation crusade by studying wildlife in Mongolia and Laos and on the Tibetan plateau of China. In the last-named, he has worked with the Chinese government to help establish several reserves, including the Chang tang Reserve, which covers about 120,000 square miles. During this century, Schaller's work in Tibet has continued. He has also initiated research on Marco Polo sheep and snow leopards in Afghanistan and Tajikistan, and on the last Asiatic cheetah in Iran. Two of his most recent books are *Tibet's Hidden Wilderness* and *Wildlife of the Tibetan Steppe*.

As vice-president of the New York-based, Wildlife Conservation Society's Science and Exploration Programme, his output of scientific and popular articles, books and documentary films has led him to be recognised as one of the world's leading field biologists.

“ A large animal needs a large area. If you protect that area, you're also protecting thousands of other plants and animals. You're saving all these species that future generations will want – you're saving the world for your children and your children's children. ”



www.wcs.org



George B. Schaller, *A Naturalist and Other Beasts: Tales From a Life in the Field* (San Francisco: Sierra Club Books, 2007)

1960

Julian Huxley

1887–1975

Nature's Red Cross

In 1960, the eminent 73-year-old biologist and popular science writer Sir Julian Huxley visited East and Central Africa to advise on wildlife conservation in the area. He was appalled by what he saw. Many parts of the continent which 30 years before had been teeming with animals were now devoid of wildlife. Huxley wrote a series of articles for *The Observer* newspaper in which he warned the British public 'that habitat is being destroyed and animals hunted at such a rate that much of the region's wildlife could disappear within the next 20 years'.

The public responded with concern. Among those who wrote to Huxley was businessman Victor Stolan who suggested an international organisation to raise funds for conservation. Huxley contacted the ornithologist Max Nicholson, Director-General of Britain's The Nature Conservancy, who took up the challenge with enthusiasm. During the spring and summer of 1961, Nicholson gathered together a team to found 'Nature's Red Cross'. Sir Peter Scott, the vice-president of the Inter- **88**

national Union for the Conservation of Nature and Natural Resources (IUCN) (now the World Conservation Union) responded immediately, and the World Wildlife Fund (now WWF) was officially registered as a charity on 11 September 1961. The new organisation joined the IUCN at its headquarters, a villa in the small town of Morges on the northern shores of Lake Geneva.

Meanwhile, a giant panda called Chi Chi had arrived at London Zoo in a blaze of publicity. Aware of the need for a strong symbol to overcome language barriers, the group agreed that the panda would make an excellent logo. Sir Peter Scott designed the famous logo based on sketches done by naturalist Gerald Watterson.

In its first three years, WWF raised and donated almost \$2 million to conservation projects around the world. One of the early grants was to the Charles Darwin Foundation in the Galapagos Islands, another was to purchase 6,668 hectares of the Gaudalquivir wetlands in southern Spain to help create the Doñana National Park. Its work was just beginning.



1960

Joy Adamson

1910–1980

Born Free

On 1 February 1956, George Adamson, senior warden for the Kenya Game Department, brought home three lion cubs whose mother he had been forced to shoot in self-defence. Adamson's 47-year-old, Austrian-born wife Joy agreed to nurture them. Raising three lion cubs soon became too much for her, so two were sent to Rotterdam Blydorp Zoo when they were five months old. Elsa, the smallest, stayed behind.

Because her infant charge had been born free, Adamson was determined that the lioness would not be tamed or domesticated. When Elsa reached sexual maturity, Adamson began to prepare her for a return to the wild. After much trial and error she succeeded but continued to enjoy yearly reunions with Elsa even after she had found a mate and raised three cubs.

In 1960, Adamson wrote about the experience in her first novel *Born Free*. It became an instant international success and was translated into over 30 languages. With the sequels *Living Free* (1961) and *Forever Free* (1962), Adamson used her fame to publicise the plight of wild animals around the world. She pledged every penny earned by the books to wildlife preservation. In 1966, the film version of *Born Free* was released and helped spread the message even further. Zoos responded by creating more humane conditions for lions and other big cats such as larger outdoor enclosures.

Adamson continued to live in her beloved Kenya. Her unique skill in handling and caring for wild animals often turned her home into an animal orphanage or veterinary hospital. She cared for everything from baby weaverbirds to baby elephants.

Joy Adamson was murdered on 3 January 1980 near her camp in Shaba Nature Preserve, where she had been living for three years. One year later a Kenyan, Paul Ekai, who had worked for her but whom she had dismissed in 1979, was convicted of her murder. Her remains were cremated and, according to her wishes, her ashes scattered on Elsa's grave.

“ Since we humans have the better brain, isn't it our responsibility to protect our fellow creatures from, oddly enough, ourselves? ”



www.elsacanada.com



Joy Adamson, *Born Free: A Lioness of Two Worlds* (New York: Pantheon, 2000)

1960

Jane Goodall

1934–

Pioneering primatologist

In the summer of 1960, the British anthropologist Dr Louis S. Leakey sent a young English student called Jane Goodall – previously his secretary – out to the Gombe National Park on the eastern shore of Lake Tanganyika. He had asked her to observe wild chimpanzees and record everything she saw. Along with **Dian Fossey**, famous for living with gorillas, and **Biruté Galdikas**, who advanced studies on orangutans, Goodall was one of the three women dubbed ‘Leakey’s Angels’.



At first the chimpanzees fled whenever they saw Goodall. But she persisted, watching from a distance with binoculars. Gradually, the chimps allowed her closer. One day, she observed them stripping leaves off twigs to fashion tools for fishing termites from their nest. Until then,

scientists had thought humans were the only species to make tools. On hearing this, Goodall’s mentor Leakey said, ‘Now we must redefine tool, redefine man, or accept chimpanzees as humans.’

Five years later, Goodall earned her PhD in ethology (animal behaviour) at Cambridge University. She immediately returned to Tanzania to establish the Gombe Stream Research Centre. There, she defied the scientific convention of the time by giving the chimpanzees personal names rather than numbers. She made other discoveries such as observing that they could engage in a primitive form of warfare – in early 1974, a four-year chimpanzee war began at Gombe, the first record of long-term warfare in non-human primates. Goodall also noted courtship patterns and even adoption of infants.

Goodall's methodology revolutionised the field of primatology. To provide ongoing support for chimpanzee research she founded the Jane Goodall Institute which supports the Gombe research and is a global leader in the effort to protect chimpanzees and their habitats. With 19 offices around the world, the institute is widely recognised for innovative, community-centred conservation and development programmes in Africa and has a global youth programme, Roots and Shoots, which currently has over 8,000 groups in 96 countries.

In 2006 she received the 60th Anniversary Medal of UNESCO and the French Légion d'Honneur.

“ You cannot get through a single day without having an impact on the world around you. What you do makes a difference, and you have to decide what kind of difference you want to make. ”



www.janegoodall.org



Jane Goodall, *My Life with the Chimpanzees*
(New York: Aladdin, 1996)

1961

Kenneth Mellanby

1908–1993

Monks wood

During the 1930s Kenneth Mellanby, a reader in medical entomology at the London School of Hygiene and Tropical Medicine, travelled to Africa to study the tsetse fly. While doing military service in the Second World War, Mellanby investigated scrub typhus, an acute infectious disease spread by chiggers (a larval stage of certain types of mite) in Burma and New Guinea. After the war his entomological research took him to Nigeria, where he founded that country's first university in Ibadan, and then back to England and Rothamstead Experimental Station, one of the oldest agricultural research institutions in the world

But it was during the 1960s that Mellanby made his major planet-saving contributions. In 1961, he became the Founding Director of the Monks Wood Research Station in Huntingdon, Cambridgeshire. Over the next decade Mellanby drew atten-

tion to the detrimental effects of chemical pollution, particularly pesticides, on the environment – echoing the concerns expressed across the Atlantic by **Rachel Carson**. **118** Instead of chemicals he advocated the use of biological control methods – the use of natural predators to keep pest populations under control. In 1970, he founded the journal *Environmental Pollution*. Among his publications was the seminal book *Pesticides and Pollution*. Monks Wood is now the Centre for Ecology and Hydrology where research continues on pollution and ecotoxicology, environmental processes and modelling, and Earth observation. In her book *Philosophers of the Earth: Conversations with Ecologists* (1972) Anne Chisholm observes that

The ecological scene in America is dominated by individuals, but in Britain it is dominated by a place, Monks Wood, the Nature Conservancy's main research station in Huntingdonshire. There is a larger concentration of ecologists at Monks Wood than anywhere else in Europe, and the work done there, since it was set up in 1960, has provided much of the substance, as opposed to the verbiage, of environmental debate.

“ Convince me that what you are doing is good science and I'll back you. ”



www.ceh.ac.uk/sites/monks_wood.html



K. Mellanby, *Pesticides and Pollution* (London: The Scientific Book Club, 1967)

1962

Rachel Carson

1907–1964

Silent Spring

In 1952, a shy, 45-year-old marine biologist called Rachel Carson published her biography of the ocean. *The Sea Around Us* quickly moved into the national best-seller lists where it remained for 86 weeks, 39 of them in first place. By 1962, it had been published in 30 languages. By this time, Carson, who had been employed by the US Fish and Wildlife Service, had retired to devote herself to researching and writing what has since become known as the book that radically changed attitudes towards the environment.

The project began when she received two letters. One came from a friend in Massachusetts bemoaning the large bird kills that had occurred on Cape Cod as the result of spraying dichlorodiphenyltrichloroethane (DDT). The other was from old friends, Stuart and Olga Huckins. It told of the destruction that aerial spraying of pesticides had caused to their two-acre private bird sanctuary at Power Point, Duxbury, Massachusetts.

Carson spent four and a half years researching the effects of DDT and other synthetic pesticides then being used to enhance agricultural productivity. She con-

cluded that the effects of pesticides and other industrial chemicals are felt throughout the food chain – that what was intended to kill an insect ends up poisoning larger animals and humans. The outcome of her research was *Silent Spring*. The book's warnings about the previously little-remarked practices of introducing an enormous variety of industrial chemicals into wilderness, waterways and habitats with little concern for possible toxicity struck a chord with the general public. Carson observed: 'We are subjecting whole populations to exposure to chemicals which animal experiments have proved to be extremely poisonous and, in many cases, cumulative in their effects. These exposures now begin at or before birth and, unless we change our methods, will continue through the lifetime of those now living'.



Silent Spring was first serialised in *The New Yorker* in June 1962, then published in September of that year. It immediately sparked off a fierce debate. Attacks came from all of the chemical industry giants with American Cyanamid Company and Monsanto publishing a parody of *Silent Spring* entitled *The Desolate Year* which described a world where famine, disease and insects ran amok because chemical pesticides had been banned. Some of the attacks were more personal, questioning Carson's integrity and even her sanity. But others came to her defence. Supreme

◆ **106** Court Justice **William O. Douglas** declared: 'We need a Bill of Rights against the 20th century poisoners of the human race.'

In 1963 President John F. Kennedy summoned a Congressional Science Advisory Committee to examine the charge 'Are pesticides publicly dangerous or aren't they?' Carson, in her last public appearance before her death from breast cancer in 1964, was called to testify. The committee's report largely backed her claims. DDT was eventually banned in the US in 1972. *Silent Spring* remains in print and continues to inspire new generations to protect the living world and its creatures.

“ The more clearly we can focus our attention on the wonders and realities of the universe around us, the less taste we shall have for destruction. ”



www.rachelcarson.org



Rachel Carson, *Silent Spring* (Boston, MA: Mariner Books, new edn 2002)