

Interview with Ullas Karanth [UK] taken by Krishnendu Bose [KB]

KB: Do you think there is a tiger crisis?

UK: I think there is a tiger crisis. There has been one for the last 200 years. I think the tiger is in a perennial crisis, but things get better, things get worse, and right now I think we are in a bad patch. I think from 1970 to 1990, I think there was some recovery in some sporadically protected areas. I think that has come under jeopardy in the last 10 to 15 years. But at the same time I don't believe the tiger is a lost cause or it's doomed to extinction, and nothing can be done to save it. Essentially the tiger has been in a crisis because it's a large meat-eating animal. It has large needs of space and as human populations have increased our demands on the natural habitats of the tiger have increased. The crisis has been pushing the tiger into smaller and smaller areas. So if you look at 3 or 400 years ago the tiger occupied 30 of present-day nation states. It occupied a very large part of Asia and Middle East and Europe. Now today its range has shrunk to less than 5% of that area. 95% shrinkage of that area. To me that's a crisis. It's not something that happened yesterday or today. I think we have to keep that balance in view and see how we can try and prevent that shrinkage further and try to expand it.

KB: Why do you say it's a crisis? Because it looks like a normal development process. It's not only the tiger. The forest...so many other things have gone because of human development.

UK: There is a view that this natural world has to go. This kind of view prevails particularly in Hong Kong and some parts of the world. That nature has no room on the earth and it completely needs to be modified for human benefits. As a scientist I disagree with such views because today's research shows that these kinds of interventions in natural processes have huge negative effects for human welfare itself. So why is it more important for the tiger? [There] is the fact that some of the species which are large, meat-eating, who are sitting at the top of the predatory chain – they are the ones who get eliminated first. We don't have to worry so much about a crow or a sparrow or a species that can coexist with the human beings. So the worry comes from the fact that if the current rate of extirpation continues... It has been wiped out from 14 or 15 countries that it used to live in, we might lose it in the other areas too.

KB: ... So are you saying that we are seeing some faster deterioration in the past few decades?

UK: I'd say that different agents of change have started. Agriculture was the first agent of change, 10,000 years ago. But in the last 2 to 300 years, invention of steel, invention of gunpowder, invention of poisons and chemicals... And in the last 2 to 300 years these demands have further accelerated certainly.

KB: You'd say now we've reached a critical point?

UK: Yeah. When a species is down to 4 to 5% of its original range, in many areas it will go. ... [How] can you govern all the problems, and given all the resources where can you manage to hang on to some of the population?

KB: Are you worried?

UK: I am absolutely worried, that's why I am in this business. At the same time I am not pessimistic. I have not given up because, for example, in the 50s and the 60s, when I was a schoolboy, I really thought that there will be no wild tigers left in 25–30

years. Many people thought so. On the other hand we've had some successes, we've had some recoveries so there are lessons learnt. And I think it's a question of applying the resources right. Because although it all looks negative, there are also large forces that are conducive for saving tigers. For example, as the economy develops, a lot of people will move off the land. Maybe not sufficiently fast everywhere to help the tiger but there is [hope]. As the service sector of the economy grows, people will get off the land. Sometimes it is the land-based occupations that come into direct conflict with tigers in rural areas. And in fact in some cases, for example, cultures and lifestyles are changing. We may view that as bad. For example, in western Karnataka where I come from, in the Malnad area, in Mangalore, Kodagu, hunting was a big social activity. It was a recreational activity. It had all sorts of connotations to the local people. People went and hunted. But over time...the whole view of hunting as a social, recreational activity, something that everybody has to do, it still prevails in NE India but it has pretty much gone from mainstream society. There are still criminal elements. There are still poachers. But overall that's stopped being a tradition.

KB: A positive...

UK: Yeah, definitely. And people want to watch TV or cricket matches or movies or whatever. This is a major positive factor that I have seen. For example, a lot of the hunting, particularly of prey species, particularly of the smaller animal species, was driven by a desperate need for protein. This was true because income levels were very low. Wage rates when I was a schoolboy around Mangalore in the villages were Rs 2–3 for a man per day. Today it is 100 or 150 or whatever. ... And there is poultry there. If you go there anywhere you find these little chicken shops where protein is available and people can afford it. There are things that are changing in favour of wildlife also.

KB: Development is taking people off the forest?

UK: Taking people off hunting primarily, which is a good thing. Economic development is taking people off land-based occupations. It has the potential to do it. I am not saying it is there. You see there are some forces which are operating in our favour. It's a question of how you manage the local contacts. That's why I don't see it all as a lost cause. And even education, media... When I was a schoolboy, if you opened a Kannada newspaper, the Sunday supplement, there would be nothing about wildlife, there might be an article about somebody who shot a tiger and what a great man he was. That's totally changed now. You open any regional language newspaper. I am not too worried about the English media or the English or Kannada news channels. You see readers writing about wild animals getting killed. There is a concern about wildlife getting saved. They may not understand the complexities. But there is a concern and media has played a huge role in it. This is another positive thing. I think it's not a lost cause for sure.

KB: Dr Karanth, how important is the tiger ecologically? ... If the tiger is removed what will happen?

UK: In a sense the water goes... This is a very simplified view. What happens is – there is sufficient research to show that – when you take top predators out of the system, it has a huge effect on other kinds of predators and on herbivores. And in the long run when you change the herbivore community you have an impact on the forest. For example, there was research in Panama, which shows that... – this is all stuff published in *Nature* and *Science*, I am not saying it as populist storytelling – removal of predators, for example, sea otters, sharks or these big cats [from] these islands...

[will] have a cascading effect down the chain. It changes the plant community composition. And in the process you might lose a lot of species that could potentially be of use to us. But it doesn't mean that if you kill all the tigers in the forest then immediately all the streams will dry up. That's a very simple-minded explanation. But sometimes explanations are given so that people make the linkage, I suppose. So the removal of the top predator changes the whole biological community. If you say, "I don't care what happens to the biological community, let's pave it all and build Macdonalds", that's also a valid view!

KB: It could lead to...

UK: It will lead to species loss, definitely. For example, [there are] some documented cases. They now say that the hunting of large sharks led to an increase in the number of sea otters in a community which then ate away certain kinds of weed. Some other kinds of things replaced it – there are these kinds of linkages, which have been established. It's not as if we know all of it. If you have an intricate machinery you don't understand how it all works, it's not wise to start pulling the gears out and screws out and fiddling with it. That is one, and secondly a lot of species have immense, tremendous, potential. The reasons why we are doing damage to tiger habitats are trivial – economic gains are trivial, if compared to what you can get from those. For example, if you look at the Western Ghats, because there is a 100% subsidy, there is a whole set of micro-hydel projects are coming up. If iron ore prices have gone up, we are slip mining certain areas, but the value of these forests, not just for watersheds – that's a value – but for biodiversity, future pharmaceuticals, future fibres, future energy sources, is huge. And we are not looking at it carefully and quantifying it. We are just going fiddling with the system. Immediately some advantage will come, but we are not viewing the long term. I think that's very unwise.

KB: So you've been in this business for the last 30 years. What has been your experience with the tiger in India?

UK: I have looked at the tiger first as a conservationist. I was a person who was involved as an amateur naturalist. I was interested in conservation. Then I started looking at the tiger as a trained biologist. Looking at its needs because I realised you cannot build effective conservation without knowing the species or the system you are trying to conserve, what its requirements are. For the last 20 years I've tried to look at that and that's given some insights which are really important for saving the tiger.

KB: What exactly have you looked at? Can you enumerate?

UK: I started actually looking at one of the things that was really neglected, although it is known – that a tiger requires 50 large animals, either deer or cows, to survive just one year. To survive sustainably you need a much larger prey base. Say about 500 prey animals. Now this piece of information has to come from very, very hard research, so one of my main interests was to look at the prey base of the tiger. Early mid-80s I started [thinking about] how do you estimate how much prey is there, and that then led me to the issue of how do you go and count prey animals? So I had to develop techniques which are based on the ideas of sampling. So one aspect of my work has revolved around the ecology of the tiger. How much food is there? What does the tiger eat? How much space it requires? How does its social system function? Those kinds of things. And later as the crisis afflicting the tiger became much more urgent I shifted my focus from understanding behaviour to understanding ecology. How populations function. How they change over time. Both prey and tiger. That

kind of led me to developing approaches or first understanding approaches for estimating animal numbers and trying to adapt them to conditions in India.

KB: Have you been satisfied by your contribution, your work actually feeding into tigers' protection and conservation of tigers?

UK: That's a very difficult question to answer because in a sense you can generate some knowledge – whether it's used or not is not completely in your control. I would say that the research I have done on tigers, on methods for studying tigers, for understanding tiger biology, has had a lot of effect on the community that is studying tigers, jaguars, pumas, a variety of big cats. So I think it had an effect on the scientific world. In terms of the group of people who are actually engaged in saving the tiger, I think it has had an effect on some conservation groups, because it has brought some scientific perspective into what they do, because conservationists may be emotionally committed to saving the tiger, but their idea of how to go about it may not be driven by science, so in that sense I have had some influence. But actually in terms of influencing the govt policies and management policies, the effect has been far less than what I would have liked to have. But I would not say that it's not there because in 1984 I started critiquing the entire idea of censuring the wildlife: tigers or their prey, saying this is simply not doable, whatever is being tried out is not the right approach. You have to move away from the Census idea, which means that you go everywhere and count every animal, to approaches that are [based] on the idea of sampling – that you take samples and you make inferences to the wider area. Now in 2005, after 21 years, the PM's TTF finally said that that was right. That basically the idea of Census doesn't work and they need to do sampling. In a sense it's an effect of what I've tried to do for 20 years. There is an implicit recognition and they are now trying to develop sampling type of approaches. I've had some effect but it's not very strong within the country, it's much more outside, for example, [on] people studying jaguars – scientists studying jaguars at universities are using my methods, so are people studying leopards in Africa, and so are scientists studying tigers in many parts of the world, including India. But as far as management is concerned I don't think it's much.

KB: Now you've put this very important point very politely... Maybe stronger critiquing is necessary. For me as a person who is looking at the whole thing, here is a scientist who for the last 20 years has given a major part of his life to understanding tigers, and here is this whole department, and the ministry and bureaucrats, who have not made use of the findings of that person. And it's not even that we are doing very well with the tigers in whatever way you want to look at it.

UK: I think the disconnect has not been consistent. ... It depends on individuals in specific positions. There were periods when there was a serious attempt to reform these monitoring practices, starting in 1997 to about 2001. The then Director of Project Tiger, he came, he saw what I was doing and he was a man with enormous practical experience. He was not a scientist.

KB: PK [Sen]...

UK: Yeah. So he said what you say makes sense to me. Let me send circulars to my people. Let me try and change the system. And we in fact had a workshop that he took the lead on. We organised. We pulled in managers. We pulled in scientists. We discussed protocols. We developed manuals now widely used across the world to monitor tigers and prey using better methods. But 4 or 5 years of the tenure of one

person is too short... When that changed all these ideas went into limbo till finally in Sariska it really blew up in everybody's face, who kept saying that there were dozens of tigers, and there were none, and then the story was put out that they had migrated to the hills. And they hadn't. Tigers don't. So finally when it exploded in a very messy way, the recognition started to come. But if you critique something for long, sometimes it's not liked. In the world of science it's liked. In the world of science, progress is though a criticism of mutual positions. It's not liked but it's accommodated. So the new position converges because of dialectics between two different views. But in the world of bureaucracy, particularly a bureaucracy that manages natural resources like the Forest Department, criticism is equated to insubordination and insolence or arrogance. I think a part of the reason is that then there is a tendency to take scientists or groups of scientists who are more conciliatory, who can be more docile. That's been one of the problems because I have been one of the outspoken persons. I have talked to everybody like I talk to another scientist, in a very objective, critical way.

KB: Can we say that it's a matter of ego of the people concerned? Of certain officers? Maybe there was also this thing about individual scientists who probably were outspoken or critical of the ways of working...

UK: I think there are two or three things here. One is the issue of this large system where scientific preparation and knowledge are not at a very high level. A lot of the importance of science is lost. But there are individuals who go both ways. For example, there is the example of GV Reddy who came and spent 3 years with me, doing a PhD. So there are officers who come in all shapes and sizes and colours. But overall the perception of the importance of science, of research, is not there. For example, the comment that telemetry is passé – it's a view but right now another scientist from WII is doing radio telemetry. He has 6 callers in Kanha Park which is the favorite place of the PT. So the officer writes to you saying telemetry is not relevant, but the Director of the PT obviously says it is very important. So there is a disconnect here between two bureaucrats. The other problem that I think I have faced ever since I began my research has been that I am associated with certain wildlife conservation advocacy groups as a scientific advisor. So they have taken, very consistently, pro-wildlife positions and they have often defended the issue that this officer brought up. It is the lower level hardworking foresters who protect the forest. I don't disagree. And in fact these advocacy groups have always worked with them and supported them. But these advocacy groups have also been very, very critical of some of the things that the Forest Department has done. For example, constantly trying to reopen logging in protected areas. They have been very critical of the massive corruption and inefficiencies that have come as a result of the intervention of the World Bank in the forest. When these advocacy groups actually affect their behaviour or the way they manage the forest, they are seen as threats and [because of] my association with them, through this reflected glory, I am perhaps seen as someone who should not be encouraged. I am not saying that everybody does it. I am seeing that element which has been here since 1990. The Minister in the state tried to stop my radio telemetry research, because apparently, I am not sure of this, someone told him that I was using telemetry to kill tigers and export their skins to wherever. This kind of idea I had to fight through courts, get back in and do my research. I have constantly faced that in the 15–16 years and I am kind of used to it. Another CM of Karnataka, when I complained to him, he told me that I should develop a thick skin like [him]: "Look at me. Nothing fazes me."

KB: It's interesting, what you are saying. In my last 10–15 years of association with field directors and senior officers, whenever your name has come up in discussions they have always said... you have a personal agenda. It's nothing to do with conservation or management. It's very unfortunate that your work, as you said, it's only now slowly being understood and integrated into management plans. Very reluctantly...

UK: During Mr Sen's period, he made a sincere attempt, but the system as a whole – the people have to understand what it is. To me, that is the key challenge – to have a professional management service running wildlife. We really don't have that.

KB: It's not just scientists. Anybody...protects it as their stronghold.

UK: I think the pressures a park manager or a divisional forest officer faces, they are enormous. He and his staff, if they are sincere, are left with a completely thankless job of saying no to virtually everybody in society. They're not in a nice position to be in. ... And it's also a fact that given the resource levels and the situation in India, it's almost impossible to regulate illegal activities going on inside. So it then becomes: "What do I do about it? Do I want it to be witnessed by others? Or do I say it doesn't exist?" I have seen both sides. I've seen both kinds of people. Some officers say "yes there are problems". In fact, when Mr Sen took over PT, the first thing he did was to send these brutally frank notes to the Ministry saying there is this problem, there is this problem. I think that's fine. Nobody says that you solve all the problems. Nobody, not even God, can move along these paths. It has to be recognised. But there is a tendency to say that if I recognise it, I'll get into trouble. My CV will get spoiled. My next promotion will be denied. So people tend then to take this position and then go back and view everybody as the enemy. That includes researchers. That includes filmmakers. That includes naturalists. That includes photographers, because by merely being present in the forests, you may witness things, which you claim on paper to be not happening. There is a lot of that also.

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KB: Raghu's [Chundawat] case is very unfortunate. Is it a pattern? Whoever comes out and is critical of the govt is sidelined?

UK: I think the problem is if you are a scientist and you are doing research, you're expected not to do conservation at the same time. That's supposed to be a schizophrenic personality. You're supposed to do either conservation or science. If you try to do both, in a sense try to use science to effect change on the ground or change in policy, then you're perceived as a threat and that happens to a lot of people. I am not worried. I am 58. I have got my recognition, what worries me is the fate of the young researchers. The moment they go and ask for permission to do research, somebody with a Masters or a PhD who cannot deal with it – they are just being battered and thrown around. It's killing a whole field of enquiry. It's not just X being harassed or my being harassed or Sidappa being harassed. It's a question of [suppressing] a whole field of enquiry because these natural areas are to me a natural laboratory. Just as an astronomer watches stars or a physicist does his research in a lab in nuclear particle accelerator, natural scientists have to go out and study these animals. It's public knowledge. It's public property. And it's the younger generation who is really getting the brunt of this now.

KB: So how can we deal with this? Is there any scope of change? You're in the forefront of the interface between the Forest Department and science. [Do] you see any kind of door or window?

UK: I'm not actually in the forefront. In the forefront are all these committees which the govt forms – the NBW or the various committees set up to implement the TTF report or the TTF. This is where the interactions happen. I am certainly not in the forefront. I am commenting sitting on the sideline. But I think this will not happen... Our science policy is very clear. If you go to DST's [Department of Science and Technology] website, you'd see, from Nehru's time, that science guides our action – in medicine, in agriculture, in telecom, virtually any aspect of human development – but somehow in this area of wildlife and to some extent forestry, we have kept science at an arm's length. It's not in line with national policy. That change can only come if PMs, CMs and Ministers of Science & Technology and eminent scientists of the country who have the ears of the powers – they recognise that there is a huge problem here. There is a whole field of science that is completely kept away from what is its right under the academic freedom that is guaranteed by the constitution. Somehow this field is not seen to be as critically important as agriculture or telecommunications, where they make a policy or have consultations. ...if they want to reform or have something to do with agriculture, they will bring Dr Swaminathan, and ask him what is to be done. This field is not perceived to be important enough to deserve that level of scrutiny from people who can make changes to the way bureaucracy functions. It's seen as a kind of a backwater field. I think that's a problem.

KB: I want to ask you a personal question. As a scientist, obviously you've been much rewarded and awarded in your community. But your subjects have not done well. They're in a critical crisis, as you just said. Can we talk about the political commitment of a scientist? Is it just your science? Or is it [about] making change on the ground?

UK: I think perfection is almost 180 degrees in the wrong direction. First of all, recognition as a scientist comes from your publications. So whatever recognition [I have] is because I've published in reputed journals, far more than others working on tigers have done. That's a different issue. In terms of being rewarded for it, I am probably the least rewarded. Other than the recognition of scientists for my publications, I have not received awards or rewards of any kind, virtually, because I have been involved in advocacy, I have been involved in actual conservation on the ground and that has made me a controversial person. And if you are a controversial person, people don't give you rewards or recognise you in a sense that my peers are. So that is factually incorrect. Secondly, if you define tigers of the world as my subject, you are right. But to save tigers across the world, there is only so much one individual can do. But certainly I have been very much involved with other groups, which includes govt officials often – not the govt officials you talked about, but the local govt officials, local politicians, and particularly advocacy groups in Nagerhole and Bandipur. And it is these areas where tigers are doing really well, where I can legitimately claim that I've played a role in doing something for these populations. For example, in Bandipur and Nagerhole, we have a very different scenario from what you saw in Sariska. We have a population of 130 or so tigers. Basically it is doing well. We have 25% which is the annual mortality, because that is the kind of surplus that is being produced here, and certainly I was involved with the advocacy groups that were involved in voluntary settlements. I was involved in a large project that really strengthened infrastructure in the 1990s. I continue to be involved in these

places. To be fair to me, I have [been] involved as an active scientist in on-ground conservation. Perhaps more than most scientists. Raghu [Chundawat] is another person who has tried to do that but unfortunately he didn't have the networks of conservationists who were with me, who allowed me to kick along a little longer. But other than that, scientists don't do that kind of a thing. I have today 12 criminal cases against me, filed in 4 different jurisdictions, for completely frivolous excuses – for doing research without permit, trespassing to collect water samples, helping somebody to make a wildlife film or whatever. But I have to go to High Court and get these criminal cases stayed, because the purpose of the cases was to paralyse me completely. And the criminal cases were not filed because the so-called crimes were true. They were filed because I was involved in an advocacy group which shut down one of the biggest iron ore mines in India. I think [to say] that I have hands off and gone after scientific glory is simply not correct. I think if I had not done all these things, I'd have written far more papers and got a lot more scientific awards.

KB: But why do people [say], “Dr Karanth has his own little world of science. He has got his own ego and we've got our own ego. ... He doesn't make enough efforts to interact and have dialogue.”

UK: This again depends on who you talk to. Particularly when I was a conservationist, till the 1990s, where I would spend a lot of time, individually, with park wardens, with park officers, they are still there. For example, the Field Director of PT in Mysore now was a DFO of Nagerhole for 5 years. There is a whole bunch of people with whom I have worked intimately, I interacted intimately. As you grow in your profession you can't drop everything and sit with a park warden every day and spend all your life doing pfaaf with him. That's not practical. I've always kept my projects open for participation. There are officers with whom I have had very good relations. I think these kinds of views come from certain individuals. ... There is a whole bunch of people with whom I have worked. But I can't go and park myself in these places and spend all my time there, I have other things to do. It is not ego.

KB: Coming over to people. You've always had very strong views on coexistence. Especially in this book, *A View from the Machan*, you talk about how people and the tiger can coexist. Would you talk about it?

UK: Absolutely. It is pointless to say people and tigers cannot coexist. They have to. It depends on what scale of landscape you are looking at. If you say people and tigers have to coexist in India, they have to in Karnataka, they have to in Mysore district. All I am saying is that given the biology of the species – that it is a big meat-eating animal – it makes certain demands. Critical breeding populations of tigers need areas where incompatible human users have to be kept out. There are certain parts of the landscape where you need tigers to breed and have viable populations. These need to be kept free of incompatible human users. That's all the argument that I am making and there will be other landscapes where tigers will come out, and there naturally interests of people have to be protected. If you have a man-eating tiger running around, you have to kill that tiger. There is no doubt about it. But this idea that you can have breeding populations of tigers and livestock grazings, and some of these activities can coexist, is very dangerous, because it will escalate the conflict. It will cause more problems for both people and tigers. So all I am saying is that [a] certain fraction of land... What that fraction will be is a societal decision, you may decide you are willing to spare none – that's fine. That's a moral view. But if you want [a] viable population of tigers, say about 20–25 breeding females, the space required for

that will vary. In some of the best areas that we have in India, perhaps it might be as small as 1000 sq km or even less. 1000 sq km is a 30 km by 30 km postage stamp on the landscape of India. [In] these kinds of spaces, you have to keep out certain human uses, because otherwise the conflict will lead to the elimination of the tiger.

KB: Human use and coexistence, not necessarily tigers – it depends on where you're coming from. Both kinds of evidence are there in the world. You know better. There are some places in the world where human use has actually increased biodiversity, and they haven't hampered [the] existence of wild animals.

UK: Biodiversity is a very, very broad word. It can mean many things, and a lot of biodiversity is obviously compatible with very heavy levels of human use. That's not the issue. For example, if you open and start logging in a rainforest you will increase biodiversity. You will increase gaps. You'll introduce successional species. You might even introduce alien exotics. So I'm not talking of biodiversity. I am talking of certain kinds of species that are ecologically fragile and conflict-prone and that need areas which have to be relatively free of human use. I don't think you can make a general rule.

KB: [The] kind of political discussions and debates we are having in our country at this point of time... Given your scientific input and experience...do you see areas where breeding population of tigers should not have human beings? Do you see it happening?

UK: I think there are places like it.

KB: Is the dialogue conducive? In the country, the kind of dialogue we are having?

UK: That's a very broad question. And it is linked into several issues. One is what do the tigers need. And other is whether you need tigers at all. There are countries that are deciding they don't need tigers. That's a different view. So if you need a breeding population, I would say that we would need [a] fraction of the land [for] that... For example, the TTF said it should 37,000 sq km for all of India. I think that is scientifically unjustifiable. That's just too small a fraction of land for a country with 3 million sq km. I think it's got to be more. But whatever be the fraction, I think it is extremely doable. ... The issue is the people whom you are inconveniencing in some manner, by restricting use or whatever, have to be compensated in a fair manner. That has not been done in many places and that to me is the cause of this divide in the debate. In fact, if you give the number of people and the number of places, it's not a huge number. Given the resources in a country, which is now growing at 8% p.a. – with this huge economic growth, I don't think it's a problem to solve the needs of people who will be affected in [those] areas...

KB: But TTF also says that 13,000 crores is required to move people out, so there has to be a level of coexistence which we have to work out.

UK: TTF, unfortunately for its good intentions, its entire statistics, its entire calculations are based on PT [Project Tiger] information which is all very shaky. You certainly require a huge amount of money to solve these problems in a manner where both people are happy and tigers are safe. But we do have the money. My argument is this. This is something that the TTF has missed and I've given it and published it in papers. I've made representations to the TTF. We've a huge budget on rural development and rural employment guarantee scheme. There's 30–40 thousand crores in the 9th plan. Now the money for compensating the people adequately, by buying the

highest quality agricultural land, moving them, resettling them, giving them alternative occupations, has to come from that budget. You can't look at the PT or the [Wildlife] Ministry's budget, and say it has to come from this budget. So you can't say that the money is not there. This is where I am saying that there is no higher application of the mind. If you tag it to the Rural Development funding in the right direction, I think we can have reasonably proportionate, intact, inviolate areas – not just for tigers, for lion-tailed macaques, and other species which have high commercial demand – and yet solve the problems of the people.

KB: ... You've been part of [the] Bhadra relocation and we've seen it was difficult to relocate these people justly. You were involved, Wildlife Trust was involved, P.K. Sen was involved, and there was Yatesh Kumar and so many good people at one place. And you had to battle it out and finally you got a good relocation package. But money is just one factor. You need so many committed people like yourself...

UK: Absolutely. That is true of anything. If you have corrupt people and inefficient people, nothing will happen. To me a Bhadra is a very positive sign. It's not even 4 years. What you saw was a culmination of something which started 20 years ago. It's not going to be easy. But one of the critical elements which deferred it by 16 years was money and that money is there. And certainly that has got to be done. It's more than just the Forest Department. In Bhadra, the resettlement part was done by a very dynamic Deputy Commissioner. He was involved. We certainly need this kind of teamwork, but I think we have that kind of talent and capacity in this country. I don't see that as a huge problem.

KB: Talking about problems – we were discussing that poaching and bone trade is perhaps one of the issues, but not perhaps the most important. [There are] more insidious threats to the tiger population...

UK: See, the populations of tiger have shrunk to 5% of their range. And this is because of a variety of factors. And even the existing populations are now isolated and some of them are now going into decline. Some of them are doing well, but a lot of them are in trouble. When we analyse this, if you particularly look at the public perception and the projections often from the NGO community, [it'll seem] it is the Chinese bone trade and trading in tigers that is the single biggest factor, and you need to fix that. And that's all there is. That's simply a distortion. Trade is a problem. But trade's not the only problem. And fixing the trade issue is not going to solve other problems which in my opinion are equally important. For example, tiger's potential habitat is 3 lakh sq km in India, probably 1.5 lakh sq km in Asia. But only a small fraction of it is occupied by a breeding, reproducing population. Rest of the area is just individuals who are just passing through. They are not breeding. So 95% of existing space for tigers is carrying numbers 1/10 or 1/20 of the tigers that could be there. Why is that? It's because of hunting of prey species. And it's legal or almost de facto legal in NE India hill states. It's very much the same situation in the rest of Asia and Russia. Some parts of India – S, C and W India – it is illegal, but still it's going on, particularly in reserved forest. And this to me is the biggest driver of tiger decline. The population in Nagerhole is doing extremely well because the prey density is very high and those tigers are reproducing well. Despite losing 20% of it every year from permanent emigration or mortalities, that population is doing well. There are the other cases, for example Sariska, where there are enough prey but whatever, because of the circumstances, people went in and took out the tiger. That's not the typical scenario. Sariska is not the typical scenario of tiger decline. It is the decline of the prey. The

second factor is that all these interferences, whether it is prey depletion, trade or anything else, they are getting enhanced because habitats are getting fragmented. They are getting fragmented because of rural demands for livestock or grazing or whatever. They are getting fragmented because of what we call benign development like rural roads, telecommunication lines, dams, irrigation and things like that. They are also getting fragmented because of new industrial projects – mining projects, micro-hydel projects that are ripping apart the Western Ghats. So there is a whole set of habitat-related issues. If you ignore all these issues... These issues demand different solutions from the one that is necessary for dealing with trade. So if you just harp on trade you ignore these bigger issues and that is my concern. Not that trade is not an issue, but these other issues have to be dealt with. Then you deal with trade, you also start getting these kinds of reactions that there is a shortage of tigers, so you have them in farms. These kinds of issues start emerging. I think the complexity of the tiger decline needs to be understood and addressed at different levels.

KB: This seems to be a very serious and scary scenario because...there are pressures of development [which] fall on the forests and tigers...

UK: We did...in the 70s...at least make the MoEF a brake, whereas the Ministry of Economic Affairs and others are the engine. It's like a car. You need a brake. Now what has happened is that you've made the engine far more powerful. You've put a 12-cylinder engine and the PM is pumping gas into the engine and pressing the accelerator, but the brake is being dismantled. This is the problem. I am still saying that economic growth is necessary but you also need strong environmental laws to keep out this kind of pressures from some part of the landscape, what John Robinson calls sustainable landscapes. The idea should not be used everywhere. Some part of the land will be very intensively used, whether it's for farming or industry or agriculture. Some part of the land will be this area where biodiversity and some form of use will coexist, and a small fraction of land, whatever the country can afford to, really needs to be locked up, primarily for the purpose of biodiversity. I think we need a land-use plan, which doesn't exist and in this vacuum MoEF has become a clearinghouse.

KB: [Is it getting] worse and worse?

UK: It is getting worse. It will get worse, unless we manage to get some parts of the landscape kept free from these pressures. But I think...you can't stand back and watch. But I think what has happened was this weakening of MoEF [which] started in the mid-90s – around that period, where the commitment to economic growth became the overwhelming concern and commitment to environmental concern began slackening. At that time, the Courts had stepped in and stemmed it to some extent. It could have been much worse. ... But that's only a stop-gap measure. We really need to bring back policies that keep these pressures out.

KB: [Regarding] the tiger and the people who are behind it, [there are] two things – one is that the vision, the tiger discourse [of] this set of people has not moved out of this set of people. Another thing which is now coming out is the pace of the decline.

...

UK: I think the question that nature conservation as a whole has been an activity or a passion restricted to the middle class, perhaps not even that, upper class people – I think it's true. I think many of these ideas when they came first – even communism – was a domain of upper middle classes in India. Most social movements, women's

rights, may not popular in a certain part of Delhi but it will be debated in a certain class. So I don't think that's per se wrong. But you are also correct that[unless] it percolates down to other social [classes] and you have an engagement of people in mofussil towns and other areas, conservation will not be a stronger force. In my own way I have tried to do that because I come from a rural lower middle-class background, to begin with. So the network that I worked with, Wildlife First, has individuals like [D]Girish , whom you've met – most of them are from rural areas, they are from middle-class backgrounds, and it is a network of that kind. If you typically look at a human rights network... [they] typically come from that background. How do you further expand it to people who are desperately poor and make them want to save tigers is a huge challenge. Because [for] many of the other agendas – land, equity and justice – people gain something, so they join the movement. In this case by keeping natural areas, the gain is very, very inter-generational. Once removed you don't see a direct gain. You might even see a negative effect. So it becomes very hard to pull certain sections of the society in the movement. But I think the base has to expand and one of the major flaws is that tiger conservation has restricted itself too much to the English media. I think it is very important that we interact with the vernacular through the regional media, make people understand. Often people do things because they don't realise the gravity of the situation.

KB: People you are talking about are very committed, very honest, very sincere about tiger conservation. ... Why has it happened like this that it hasn't gone out of [the group]? ... You know you haven't heard new voices of people who have come up with their experiences...

UK: That is changing. In the conservation science community we have a constant flow of people coming up and all that. In the world of conservation, I think you have to be rooted in regional contexts, local contexts and you try to build that. I think there are groups in Assam...

KB: I am talking about the tiger as an iconic, glamorous species. There have been very few people talking about this and somehow it hasn't gone out of this motley set of people.

UK: I think that's also a problem with our way of covering news. In fact it has not even gone beyond Delhi Corporation limits. If you see 99% of media coverage of tiger issue, it will all be people based in Delhi and their wisdom – whichever channel you switch on, whichever newspaper you read. Because to go in search of these kinds of stories is a much harder job. To find these kinds of people who may be there, but who may not be highly visible. Unless there is an effort on the part of the people reporting the stories to go out, find people and report real stories, [there'll be] the same old stories and clichés. I don't know how it can change.

KB: It's more of a media problem.

UK: It's also a media problem. I give an example of a guy called P.N. Muttanah, who is a part of the Wildlife First network. We found him running a small Kannada newspaper in Coorg, about 7–8 years ago. The man seemed to have enough passion, enough social skills, a genuine commitment to tribals, and we supported him and formed an NGO called LIFT [Living Inspiration for Tribals]. He stays in a place called Hundsur and he is involved in a voluntary resettlement project – it's a govt

project. It runs good when the officers are good, it runs bad when the officers are bad. But unless there is a huge NGO participation...

KB: Where do we go from here?

UK: I think the whole idea is one should be open with what one believes. I think anybody who says that he has not made a mistake and learned from it... In that sense, have I made a mistake somewhere? I am not sure. I don't think I have. But certainly, I believed in a model of tiger conservation. The science of it I get very well, but how exactly it can move forward, I don't have very clear answers. Because the model that sort of worked when there were good people like Debroy or PK...the system itself has crumbled now. Completely. And other people say that a completely decentralised model is required with the villagers and Panchayat Committee saving the tiger, etc. I don't see that coming into place also, because some of the ills of the bigger system are percolating there. It can come if you have a very committed local populace that then reforms their own panchayats or whatever. But right now, for doing enforcement, which unfortunately is an essential part of all this, I don't see that happening. There are solutions which suggest that we should make it even more centric – like have the army or have some kind of a mighty force, sitting in Delhi, rushing everywhere. That certainly is not going to work. So I don't have the answers. I feel I haven't learnt enough. In some sense, that has been a failure. I am really veering to the view that perhaps we should go back to the system that existed before the IFS was created in 1967, where we had state forest services, which were more in tune with the culture of the state, the language. And you create forest services at the state level, which function very differently, do things differently, have a different set of relationships with local bodies and panchayats, etc. But I think in the end we have to deal with the democratically elected people. They may not be right. They may not look right. They may not sound right. I think they represent the people. Good or bad, they have to go every 5 years and face the public. Bureaucrats don't have to. NGOs don't have to. Scientists don't have to. I think that's the element we somehow have to pull into the conservation business. I know this is a very half-baked answer, because I don't have an answer. So in some sense I've failed – in the sense that I don't understand it all.

KB: I am personally very curious as to the political standards of science. If science cannot change things and heighten awareness, is it just an academic exercise?

UK: You're right. Technically [the scientist] is a poet. He is a creative person. He creates and the rest of the society uses it or throws it away depending on what it sees as useful or not useful. Many great inventions never have market value so they never get absorbed or wanted by anybody. Then it's up to the individual to say how far I want to push my science for it to make a difference. If somebody is studying astronomy, for example, there is no way he can do anything. He is watching stars and when cosmos was born. In applied science like agriculture or wildlife science, which I am in, I personally feel we have a greater obligation. It may not be that every scientist should go and sit with the Minister or a bureaucrat and fight with him. Because it's quite a thankless job. The amount of time you lose, the frustrations you face, is unbelievable. But at least scientists certainly must communicate with the broader public. They should not sit in an ivory tower and say, "science, you do not understand". I think they should write to popular magazines. If they can't write, talk to somebody who can write. Talk to the media. I think it's very important for a scientist to reach out to a broader audience using other avenues, but [should] they get into the trenches and get criminal cases filed on them, get research stopped, get bills

for 4 lakh [for] elephant hire, dumped down them after 10 years? So these kinds of things, I don't think it's fair for society to say every scientist should get into. I don't think it's fair.

KB: About this young breed of scientists – they have a broader view of conservation and people...

UK: Naturally, my views are different from my father's. And so the generational shift of how the world is perceived will be there and some of them, I think, are doing exactly the kind of things I am doing. For example, Aparajita Datta...she is involved with the politics, with the local bureaucracy. She is doing everything. Others tend to take a more academic view. That's fine. Some people feel that individually engaging with bureaucrats and politicians is not the way to go. You have to change the system itself and the way to change the system is to interact with social scientists and have seminars and that kind of thing. It's a different flavour of conservation. And there is academic conservation. Our premier journal, *Conservation Biology*, I consider it a bit of an academic journal, because scientists like to sit with other scientists, maybe biologists. Maybe you get a broader view by sitting with the social scientists. But you are still in these cloisters. I think it is necessary to engage with the real dirt. There, I think, even in the younger generation you'll find a mix. Some who want to do that, some who don't want to do that.

KB: Last[ly], what is your verdict on the tiger, in a nutshell?

UK: In a nutshell, I don't see the tiger as a lost cause. I don't believe these doomsday prophecies who said that the tiger would go extinct in the year 2000 – *Time* magazine, BBC and many conservationists. I told them at that time, it wouldn't. Now people have pushed the date to 2015. Where people are doing the right things tigers will survive. Where people are not doing the right things tiger will go. And people are doing right things in many places. Not just in India. For example, in the Western Forest Complex in Thailand is an 18,000 sq km deciduous forest of the highest quality. Tigers are recovering there. Russian Far East. Given all the problems, the numbers are recovering. There are places in India, for example, the population in Kanha and around it. Although it's more of a govt model, I think it's working. In Nagerhole and Bandipur. It's really what we do. I don't believe in prophesising what is the future, but I am pretty confident that there will be tigers in the 22nd and 23rd centuries too. Wild tigers.