Avian Mortality at Communications Towers

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Panel Discussion

Al Manville's Introduction of New Panel Members:

Dr. Michael Avery. He participated in the RESOLVE discussions last June, he did an M.Sc. at North Dakota State, and a Ph.D. in Wildlife Ecology at the University of California, Davis. Michael is currently Project Leader of the USDA National Wildlife Research Center, Gainesville, Florida. He previously has worked for the U.S. Fish & Wildlife Service and the National Park Service. He is active with the *Journal of Wildlife Management* and with other issues.

Arthur Clark. He participated in the RESOLVE discussions on June 29th and is the Associate Curator of Vertebrate Zoology at the Buffalo Museum of Science, Buffalo, New York. Art has studied bird kills at television towers in western New York State since 1967. Over a 32-year period, he has retrieved 20,330 tower-killed birds of a 110 different species.

John Powers. He is Vice President of Regional Markets for Crown Castle International, Albany, NY. Crown Castle owns the largest number of towers in the world. They own all of BBC's towers and Bell Atlantic's towers. He is responsible for the development and operation of all Crown Castle regional offices in the United States, which is currently in an excess of 14,000 towers at 15 offices. For 14 years he previously worked for the Motorola Corporation.

Dave Wilson. He is with the Office of Science and Technology Department, of the National Association of Broadcasters, in Washington, DC.

Gerald Winegrad. He is Vice President for Policy for the American Bird Conservancy, Washington, DC. Gerald served as a State Senator from the State of Maryland for approximately 16 years where he worked on a number of legislative issues dealing with the environment.

Steve Ugoretz. He is with the Wisconsin Department of Natural Resources, in Madison. Steve is an Environmental Analyst and Review Specialist. He chairs the Wisconsin Department's Energy Team and is also on the Avian Subcommittee of the National Wind Coordinating Committee – an issue with which my agency is also involved dealing with the wind industry that I sighted earlier this afternoon.

Ladies and gentlemen, welcome to you all. Let us begin the panel discussion.

Discussion

Al Manville – We have 6 or 7 questions that Gerald [Winegrad] and Kathleen [Rogers] have retrieved from the audience. Let's do this first. Let's take a stab at answering these questions, then we will get into the nitty-gritty of a discussion on what needs to be done regarding research. Gerald is going to read the question; it's directed either to a specific speaker or generically to the panel.

Gerald Winegrad – The first question is to Ron Larkin. The question, "could one measure other physical signs of exhaustion like lactic acid content to test the hypothesis of birds tiring of circling and dropping to the ground?"

Ron Larkin – Yes. If you have a dead bird, you can do practically anything you want with the carcass at that point. There are no regulations covering you. You are picking up an animal that would otherwise be scavenged and completely lost to science so DNA analyses would be quite fruitful. Analysis of the fat content would be quite fruitful. And many, many different physiological measures including for instance corticosterone would be very, very interesting to look at in these birds. Absolutely.

Gerald Winegrad – OK, Holly Berland has been very popular. I don't know if it's because of her ankle sprain or the FCC. I am going to try and combine these so that everyone gets their questions answered by Holly. "How does the public interest response to the FCC licensers affect their responsibility to actively address the bird, tower-kill issue and also, given the need for research into the issue of birds killed by towers, would the FCC consider changing its rules to require licensees to pay for research?"

Holly Berland – I'm glad that you asked that question. The topic of migratory birds and the potential impact of towers is a relatively new area and new subject for the Agency staff. We are getting involved by attending meetings such as this. The Commission has neither categorically excluded nor addressed migratory birds on a routine basis. In other words, the Commission has not decided that individually or cumulatively towers will not affect migratory birds. Simply, the Commission has not addressed it. The Commission's environmental rules are silent in so far as migratory birds. Unfortunately, as a regulatory Agency, given the lack of scientific information and studies at this juncture, it might be considered irresponsible for the Agency at this point in time to routinely require our licensees to take into account migratory birds. We are interested, of course, in further studies and would participate on panels and try to do what we can, but at this juncture it's not necessarily accurate to say the Commission has just simply avoided it. We just do not know. Just like the FAA, this is a new subject and we're in a get-information-gathering/learning mode at this juncture. Is that clear, a little clearer? I mean we have not made a determination. We've only looked at it on occasion.

Gerald Winegrad – Holly, the follow-up to one other question that was specific is that the questioner states that, "there has been a request by the National Audubon Society in a filing that the FCC do an Environmental Impact Study under NEPA of the whole issue. Where is that?"

Holly Berland – I believe that the Audubon Society's petition dealt with DTV preemption – public notice. The public notice was issued because it was thought at the time that with the rapid deployment of DTV that the broadcasters would experience zoning and siting problems. But in point-of-fact, that has not been the case because the Agency at this juncture is not going forward with the order. That public notice was subsumed in the Notice of Proposed Rule Making to preempt local zoning in so far as DTV, and at this point, we're not going forward. I guess it's on hold.

Gerald Winegrad – For Dave Bayley of the FAA. "Isn't there an aviation safety interest in avoiding groups of birds, hovering around towers on reduced visibility conditions?"

Dave Bayley – Yes, there's always an aviation safety interest in avoiding birds, but there is also a safety aviation interest in avoiding the tower itself. We wouldn't like to see either birds or aircraft in close proximity to the tower. Where the tower becomes an attraction to large numbers of birds, that could become a problem to aviation safety if it is close to an airport or a flyway that we use routinely. I don't know if that answers it or not.

Gerald Winegrad – This one isn't directed to anyone in particular, but it reads, "please provide suggestions on how to estimate loses of tower-kill birds to predators and scavengers." Is there any science-based way to do that? There were several people that spoke on that issue. Paul Kerlinger?

Paul Kerlinger – Yes, those types of studies are fairly standard. What you do is you simply put out carcasses in an area and you go back and check them on a regular basis. You do that a few times until you get a rate of removal and then you incorporate that rate of removal into your overall model for determining the actual number of birds that were out there originally.

Ron Larkin – This might be a little more difficult in the case of nocturnal bird kills. First of all, the scavengers become good at checking the towers. There is a strong component of the animal's learning and the animal's altering its home range under certain environmental circumstances. We don't for instance know whether there is more scavenging after a cloudy night, or in certain atmospheric pressure conditions than in others with towers, but it wouldn't be hard to investigate. You cut the grass like a golf course as was suggested earlier, you put up a chain-link fence around the tower, you check the birds inside the chain-link fence and outside the chain-link fence – an exclosure experiment. You put radio-monitoring on local carnivores to see whether they check the tower under certain environmental situations. You can test the various problems and hypotheses I just brought up – these are pretty standard techniques.

Sid Gauthreaux – Just a quick comment. The owl feather you saw in one of the photographs of the collision victims was not an accident. It wasn't a victim. In our study in Charleston, [SC], we had to race Great Horned Owls to pick up birds as you could hear the sound of the bird hitting the ground and so did the owls, and the owls would vector in on the birds just as we would. So putting out birds and not going through the actual event of having the birds hit the ground and having the predator notice it at the same time the researchers noted – you may severely underestimate predator removal.

Gerald Winegrad – OK, the next question is for the wireless industry. I guess this is directed to Sheldon Moss. "Given that there is still much to be done to demonstrate conclusively that communications towers have a detrimental effect on bird populations, wouldn't it be wise to apply the precautionary principle when the chance that the risk of losing some of these declining populations is too great to adopt simply a wait-and-see attitude?"

Sheldon Moss – [steers question to John Powers of Crown Castle International].

John Powers – In terms of preventative measures, the whole reason our company exists is because the FCC has recommended preventative measures, in terms of reducing the number of towers in general. So, the industry that I'm in is tower co-location, and it exists for that exact reason. I've repeatedly heard today that there are thousands of towers being built. Right now we average about 9 tenants on our original towers in Pittsburgh. Some towers you have as many as 120 tenants, and that's pretty much any wireless carrier with an antenna – where before you would have had 6 different people going out there and building towers, you heard Southwestern Bell, you heard Sheldon, you heard other people talking about co-location. They are trying to reduce the number of towers. It's a situation where on both sides there is an education process going on. There is an education process understanding what is being deployed in wireless – what technology. Because from the studies I've seen on tower kills, the majority and the worst offenders have been the tall towers, which are typically broadcast towers. Those are very high power, very tall towers and they are usually guyed towers. When you look at the majority of towers that are going through zoning, and getting processed to be built, it's all low-power broadcast transmission, like personal communications which is typically under 200 feet. So regarding preventative measures, I think the FCC is making recommendations.

They have not got to the point where they can demand things because there's other rights that they infringe on, but they have made very strong recommendations across the industry on co-locating and everything else – not only worried about the migratory bird problem, but the total proliferation of towers, because I think there is recognition but you are getting education on both sides and that's why companies like myself are here today to make sure that we continue our education in terms of the issues with not only migratory birds but wildlife in general.

Sheldon Moss – One other general concern from the industry, and I think it has been pretty evident from the discussion today, I think that we are all struggling to get an overall assessment of the scope of the problem. I know this sounds a little self-serving, but from an industry standpoint, we'd have some serious doubts about being engaged in something like a large-scale mitigation program that was very costly and could essentially jeopardize the ability of the industry to be able to advance this telecommunications revolution. If it turned out that the overall cumulative effect of these towers was relatively minor and there potentially could be other reasons why certain populations of protected species are actually declining, the industry would be a little-bit concerned if it was required to take some truly heroic measures that in the final result didn't really achieve anything while other more important or more meaningful sources of bird fatalities essentially go unchecked. So before advancing we think that more needs to be done.

Dave Wilson – If I could just add something with regard to the broadcasters prospective on this, I've heard a number of people today particularly Kathleen [Rogers] in her talk kind of categorize the types of towers as PCS/cellular and these monster-like broadcast towers, and Kathleen also broke it down into 3 categories where existing radio and TV were in one category and then she implied that digital television towers would be even bigger. I don't think that's really quite an accurate breakdown of the way or the size of towers. Really what it boils down to is the two-way, high-volume mobile communications like cellular and PCS, each tower, generally speaking, especially in urban areas or heavily populated areas, has a lower height because it has a smaller coverage area because they need more small coverage areas in order to increase the capacity of the entire system and serve as many cellular and PCS telephone customers as they can in one time. On the other hand, in transmission systems where you have a single tower that is feeding a one-way communication to a large population in that case, in order to efficiently serve a wide area without having multiple towers – in keeping the number of towers to a minimum – you have to have a much taller tower. And that applies to broadcasting which is obviously a one-way transmission, but it also applies to – and Sheldon alluded to this in his comments which I thought were very good – it also applies to things like police, fire, ambulance and all those sort of land/mobile communications. I happen to be on the board of directors of a radio station in Virginia that is leasing space from Motorola on a Motorola tower that is over 200 feet tall which has the local police department, local ambulance, fire, etc. are all up there and they have the highest positions on the tower because they are very concerned about a wide coverage area. So really when you're thinking about the tall, large towers, you have to also think about all those important public safety things that are going on because they really need to be just as tall, as high up as broadcast towers. And also just to add, there is no real difference between the height of a digital TV antenna and the height of an analog TV antenna, they are really essentially the same thing. Most analog TV broadcasters are trying to get their digital antenna on their same tower because the tower is so expensive to build.

Gerald Winegrad – Thank you very much. The next question is for the gentlemen from Southwestern Bell Wireless SBC, Mike Allred. "Is it true that the Washington Monument is really a stealth cell-phone tower?" I'm sorry, you don't have to answer that. [laughter] The next question is a profound one and that is, "do we have scientific evidence or knowledge to make recommendations for new towers on how to reduce avian mortality?"

Al Manville – Which leads us into our discussion this afternoon.

Gerald Winegrad – Do you want to skip that one for further discussion?

Al Manville – We're running out of time here, so let's start the discussion. Do you want to read the question again, Gerald?

Gerald Winegrad – "Do we have scientific evidence or knowledge to make recommendations for new towers on how to reduce avian mortality?"

Mike Avery – I'd like to take a stab at starting the discussion. There aren't a whole lot of options available for some of these towers once you site them, once they're at a location and are going to be built. The two things that would help, in my opinion, to reduce mortality at any new structure would be to do it without guy wires if that is possible, and to do it with the lights that are on the least amount of time possible, in this case the strobe lights. Strobe lighting would, I think, create an environment at the tower during nocturnal migration that would be less harmful to the birds than a continuously lighted situation that we see with the red, blinking obstruction lights. Other than that, I don't think that we have any information that I know of that would bear on that question. That's why we need research on it.

Al Manville – Let me ask a question of Dave Bayley. This gets into the lighting issue and Michael, you may have proposed this in something you sent me and we discussed a little bit at the RESOLVE meeting [June 29, 1999]. What kind of flexibility and leeway does the FAA and Holly need (to address this to the FCC as well) to allow us to continue to maintain the towers in a safe manner as far as lighting is concerned but expand the duration – put, say, a light that has a dark phase of maybe 4 to 6 seconds as opposed to 1 to 2 or just blinking or solid red as some of them do? What kind of flexibility do you suppose the FAA has there as far as allowing or at least assessing that from a pilot-safety standpoint?

Dave Bayley – Well, I don't know that they've done any assessment recently on it, I mean the rules have been around for a number of years and they're the ones that we've kind of used as tried and true. As far as the flexibility on it, it pretty much depends. Any lighting we do is usually, as I said, in response to what the proponent wants us to do. I offered the suggestion that there may be some proponent who would be willing to experiment by using different types of lighting such as maybe a different flash sequence or some other sequence with the red, but I'm not so sure that we could enforce that as far as that goes. Anything you do, it kind of goes back to the original question of what can be done to mitigate the avian mortality. I think you have to look at it as connected to how do we, as humans, perceive those lights. What makes them conspicuous to a pilot if it's making it conspicuous to the birds also and creating a problem, then is there an alternative, and that's something that would have to be researched. Presently, in the scheme of things that we have, I would say there probably isn't much flexibility other than if there is something out there where you could configure the lights and approach it from a standpoint of an experiment. If it's not in a major [aircraft] flyway, possibly set up a Notice to Airmen so that they would be aware of this. We do all sorts of research with lasers where we notify the airman about the lasers and we set it up for these research lasers such as UNH [University of New Hampshire] and MIT [Massachusetts Institute of Technology] are doing where they have spotters, they use radar to detect aircraft that may be approaching, and in a scenario like that, you might be able to set up a lighting experiment. That's about the best I could hope for at this point, but it's not something that we've really even looked at. It probably requires some sort of research. I would offer that as a possibility.

Al Manville – One of the things that we discussed at the RESOLVE meeting was tying in with NOAA's weather database and through computer analysis determine when the most likely bad-weather events would be. Then tie in these with the migrations – spring and fall – and then try to key in the studies based on when we expect we're going to see low-ceiling obscuration, cloudy , misty conditions on X number of days.

Then, say, over the past whatever number of years, we found them to be the month of say March – or whatever – at this particular location. That way you could focus in on when the likely events would occur and then do what you're suggesting.

Dave Bayley– Yes, I think if you satisfy the needs of both communities. As I said, this is new to the FAA as far as this being an environmental problem and it's not that we're trying to turn our backs toward it, but our mandate is to provide for safety to aviation and to the extent that we can incorporate some sort of mitigation for this particular problem, I don't see that that's a major problem as far as looking at the issue, but you're going to have to identify what the problem is and what the solutions are. As I said, then we can look at how it will affect making the towers visible to aircraft. So to the extent that we can satisfy our mandate to maintain a safe system then we would incorporate those environmental concerns. Show us the research.

Al Manville– Steve [Ugoretz].

Steve Ugoretz – I know that most if not all airplanes are able to activate some of the smaller landing strips that don't have operators there to turn on the lights. Most of them are able to with use of their radio on a certain frequency activate landing lights. Is there some way that the system which is pre-existing – therefore would not require, one assumes, a lot of investment – could be used to turn on and off the towers? I know the towers are marked on the aviation charts and could they squawk on the tower lights the same way they squawk on the automatic landing lights?

Dave Bayley – Well again, it's part of the technology that is out there, but to do some of these things – and it was mentioned in the rule-making as a possibility that's something you have to do – yes, if you want to turn the lights on, could you do it remotely? I'm sure you could. Would it satisfy the needs for safe aviation? That's something we would have to look at, the technology there, and then everybody has to comment on that, because anything we do as a Federal action then, everybody has to weigh in on that. We put it in the *Federal Register*, they all come back with their comments and again it will get down to cost. Is it cost neutral so that pilots wouldn't object? Is it still going to provide for safety? If the pilot forgets to look at the chart or doesn't hit some sort of device that would turn the lights on, and then he hits the tower – who's going to be responsible in that case?

Al Manville – Ron [Larkin], you had a question.

Ron Larkin – I would like to make two simple comments. I'm not an air safety expert, just a person who has thought about this and read about it some. One is that we have a policy question here which is what could we do to towers that might still keep them safe for people and make them safe for birds. Nobody in this room can answer that question right now because we don't know what the nature of those changes to the lights should be. Therefore, what we really are talking about is the purpose of Al's panel discussion right now, which is, what research do we need to do to establish that question? I'll simply state that it is easy to design a very, very – let's say – totally safe experiment using 1 tower or 2 towers that are not ever going to affect the air safety around the area, but can provide us excellent data to answer that first issue. You don't need to do it over the whole country, you just need a couple of towers in a certain place, maybe an airport radar nearby that tells you where all planes are all the time. This is not a difficult problem.
The second issue I wanted to bring up is that turning off the lights might only be a short-term solution over the slightly longer-term. I'm going to make the radical statement that tower lights are obsolete and airport radars are obsolete. Aircraft within the next 4 or 5 years are going to be turning almost exclusively to using GPS to navigate by in three dimensions and landing aircraft will be [GPS driven] – and the pilot will almost be redundant except in the very last stages of landing.

GPS is going to rule the aviation industry and what that means is a pilot looking out through the wind screen [canopy] is [relying on] a secondary safety device [the lights] in the aircraft.
It's that way with big commercial aircraft, pretty much right now, and it's going to be that way in general aviation aircraft because we're going to have something the size of a toaster that will tell the plane exactly where it is in space to within a few meters and will know where all the towers in North America are in its database. That's technologically easily [available] as of about last year, so many of these questions of what can we do in terms of lights and towers might become obsolete in a few years. Wouldn't that be nice.

Al Manville – Bill, you had a comment.

Bill Evans – I was wondering if Dave [Bayley] knew how many collisions with towers there have been with planes, say over the last decade? I mean, what's the frequency?

Dave Bayley – I don't think there has been any empirical data. Someone, when we had a tower proposed in Rhode Island that was going to be nearly 1,000 feet high, alluded to a case 30 years ago and sent me a newspaper clipping of a small aircraft that had hit that tower, but I can't say in my 20 years in the FAA that I have any knowledge directly. I'm sure that there's the possibility that that has happened. It's ironic that you mentioned that because often times when we get people who resist our requests to mark and light a tower they'll say but we've been here for 30 years and nobody has hit us yet, and because of re-registration we've gone to the FAA. Our determination will be that they mark and light it. We try to provide a zero accident rate.

Sheldon Moss – I mean just in the last year – Holly you might know more about this – the FCC publicized at least 2 near misses where helicopters came close to communication towers and I know that there wasn't actually a collision but it certainly raised a lot of concern at the FCC and they did impose some pretty hefty fines – what they call forfeitures – on the owners of the towers.

Al Manville – I have a question that I would like to address to John Powers and/or Dave Wilson. We discussed this a little-bit at the RESOLVE meeting and it's been bouncing around, this is the issue of, "will satellites replace many if not most of the existing technologies within the next 20 to 25 years?" Holly responded at the RESOLVE meeting that in some cases, simply not. Can you shed any additional light on that?

John Powers – I'll just take one example to try to give you a perspective on that. The most complex, most sophisticated satellite constellation today is Motorola's Iridium. It basically consists of 72 mid-earth orbiting satellites that provide voice communication. It's not data communication, it's not television broadcast, it's voice and it's 72 satellites. The effort to launch it was highly publicized with somewhere between an $8 to 9 billion launch. The capacity of that system is roughly about the capacity of your wireless system in New York City. So to put it in perspective, the belief that satellites will replace the towers is definitely not the case. And there continues to be more roll-out of more wireless services everything from wireless cable, personal communications, and you'll continue to see digital roll-out. Actually from a lot of peoples' perspectives, digital television should be good news because what it does is by digitizing your signal. You're taking and compressing what used to take a lot more bandwidth onto less bandwidth. So now a television broadcaster can provide much more with less space which eventually will provide less requirements at tower sites, and more economics for having gone on lower facilities at some point in time if it's economically feasible.
But it's not, and Dave [Bayley] made this point that is very important. The wireless industry converted to digital, they didn't put up more towers. What they do is that they allocate a portion of the spectrum and now compress a number of signals onto a single channel where before they occupied multiple channels. The towers are not going to be reduced by satellites in the near future. I think that's a pretty safe conclusion.

Dave Wilson – I think that those remarks are right on point and I won't really add too much to them except – somebody eluded earlier in the presentation portion about the strong desire in the government – and I think most people would agree, most Americans would agree – that competition is very important to our telecommunications service market place. There is only a limited number of satellite slots and to have everything focused or provided by satellite, while it wouldn't necessarily be all from the same company, you are really limiting the amount of competition you can have in telecommunications if you're going to say, well there is going to be no terrestrial communication, only satellite – that's a very important economic component.

Al Manville – OK, let's jump into the research issue here. We've heard a number of suggestions dealing with lighting issues this afternoon and on previous occasions. Can we agree that we need to focus on the question of, "is it the color of the light, the frequency of the light, or is it the issue of duration between the pulse that makes a difference? What's attracting the birds?" Does that seem to be the issue? I know a number of you have talked about that today, so let me just throw that out as a question for discussion.

Michael Avery – I would like to suggest that before we start talking about technical details like that, which are important, I think that we ought to go back to defining the problem which is what I keep hearing from the industry representatives and from the Federal agencies here is that we really don't have a good handle on the problem. Until we do, it's going to be awfully hard to convince, I think, to push for any changes. Any investigation you begin, you begin with defining the problem, the extent, the nature, etc. I really think that's where the research needs to be focused initially. The lights are important, but again, what if you find out something, you still have to show these guys that there's a problem out there.

Al Manville – Michael, how would you suggest going about that? I know you had sent me some notes on that.

Michael Avery – Well, there's been a number of suggestions to try to standardize a methodology with the advice of statistical experts to sample if you will use the existing structures and come up with a – I would say at least a 3 to 5 year period of time where we actually quantify what's being killed. I'll leave the statistics to someone else. It would take a real concerted effort to do it properly, but until we do, I don't really see much progress being made. This has been going on for 50 years, the first bird kill that I know of at a tower took place in 1948 in Baltimore and it's still happening, so we're no farther along than when this was first being recorded. So I really think that it's going to have to take an agency like the Fish and Wildlife Service, for example, to run this thing and to get a group of interested parties together and try to start figuring out what we're dealing with out here.

Steven Ugoretz – Yes, I agree that determining the magnitude of the problem is important. I think to do that you not only have to incorporate a standardized methodology and metrics, but also some of the characteristics of the towers [especially] if you want to try to get estimates of overall numbers of birds killed. If it has anything to do with the lighting or the height which may be more important or just as important as the lighting, those have to be incorporated into any of the studies that you do. Also, you might not want to lose time by not ignoring some of those questions early on and start examining them very carefully right from the get-go, right from the beginning. So by incorporating all of those, you get a much better picture, you might even get a better bang for your buck as well.

Gerald Winegrad – I think both the literature as well as individual tower data, if you will, documents well that there are literally hundreds of thousands, millions probably, of migratory birds killed each year. If someone was doing the same thing by shot-gunning them collectively around the country there would be a public cry and we wouldn't even be sitting at this table.

The FWS would be enforcing the law, the FAA would be writing and requiring EA's on bird impacts, and the industry would have already funded and found the solutions to the problems. I think that while you can always do more research probably for the next 100 years and document the extent at individual towers and look at the different types of towers, weather events, non-weather events, and count the different warblers and those many species of songbirds which the evidence clearly documents are the main birds killed – with so many of those species in decline because of various reasons – I don't think that we can sit here and say that something that may be rather simple, such as changing the color of the lights or pulsing the lights, should not be examined in research. That research should be done right now. We all ought to work collectively, like what was done in the power transmission industry to find the spaces and the collective solution with the Electric Power Research Institute, NGO's, and the government. I think that's what we ought to be working on is solutions to keep the birds from being killed. I mean we have documentation after documentation – Kansas tower events – some of them over 30 and 40 years, where birds are being killed.

Al Manville – That's a good point. One of the points that I made earlier is that we need to do the same thing that we've done through the Avian Power Line Interaction Committee, and through the National Wind Coordinating Committee's Avian Subcommittee there, to try to deal with those problems, and use that as a model. I would extend an invitation to the communications industry to join us in that very effort. Folks here at the table would be a great start at getting that initiative formed because that's what its going to take, I think. Steve [Ugoretz], you had a comment?

Steve Ugoretz – Yes, I think one of the things that we might want to consider is if it is a matter of defining the geographical scope of tower mortality of even the technological scope – in other words the types of towers and height classification of towers – maybe we need to look at a kind of triage approach here of seeing if we can mount some kind of rapid response effort to get some very basic information on the distribution of mortalities in different parts of the country. For instance, we heard that there appears to be much less mortality found west of the Rockies than east of the Rockies. I don't know if that's been on the basis of less people looking there and the towers being in more isolated places compared to some of the locations here in the eastern part of the country where perhaps there are more densely populated areas where there are people who have been out there looking – doing these kind of long-term voluntary monitoring at particular towers that we've been hearing about. So whatever those factors are, maybe what we need to do is put together a kind of a network of people sort of like the network that Bill has and there is going to be, which partly will also be up to the industry. Their part of it could be as simple as opening up their tower facilities to people who have been trained to do this basic monitoring. One of the problems that we had in Wisconsin where we were looking at an area where there were wind turbines proposed and where there were 3 large broadcast communications towers right adjacent to the site that we wanted to do a pre-monitoring study – base level mortality due to these facilities – only one of them allowed the researchers onto their property. Obviously there's concern if you are finding dead birds that are going to cause you a problem in terms of potential enforcement actions. If there is some way that can be addressed either by some kind of agreement between the FWS and the industry – or kind of a due-diligence type of thing where efforts to address the issue will be taken into consideration in terms of the possibility of enforcement action – that might go a long way towards opening up some of the sights we need to look at.

Al Manville – Let me get back to Michael's [Avery] suggestion about defining the problem. Let me just say that as a graduate student, one of the things I was taught – one of the first things you do in a research project is a literature review to see what's been done so you're not duplicating effort. Do we need to do a comprehensive literature search and synthesis of this issue? Do we have enough combined information among all of you here at this table today that we could answer some of the questions that we're raising now? Or do we need to do a global search to see what else has been done, perhaps over in Europe or elsewhere?

Bill Evans – The way that this problem has come up, it was something that just sort of happened incidentally; it started in the late [19]40s and 50s, and we've been sort of living with it up until the past few years. All the sudden this change in climate with declining songbird populations and increasing towers has catalyzed concern over the issue, so I don't think we are going to find a lot of unknown studies out there. And, I actually agree with Michael [Avery] and Steve [Ugoretz] that we do need to continue doing studies on a continent-wide basis on what the size of this mortality is and possibly we could use some new technologies to help us so that we're not reduplicating these long 30-year studies before we make a conclusion. Possibly, for example, we could have acoustic sensors on towers with a modem that was provided by the wireless companies that would radio this information to a central command post in the FWS that would basically tell when birds were flying around and calling around a tower. I mean there's a lot of different creative approaches here, but I guess when I look back at the literature, I think we've got plenty of evidence, and I stand with Gerald [Winegrad] on this. Any time you have a 1000-ft. tower and you have a kill of 1,000 birds or more, that's a problem. It's not necessarily something we need to stop our communications practices for – I mean TV and cell phones are incredible – but I think it is something that we need to devote research to, whenever you have a problem of that magnitude, or something that we estimate in the millions of songbirds killed every year.

Al Manville – I'm just thinking, for example – and I may mis-speak here – but I believe in Australia, they use yellow lights to keep insect populations down around airports to keep Nighthawks from flying around the towers so that they don't have aircraft/birdstrike issues. I wonder if there has been anything published elsewhere on that issue. I'm not familiar with it, or if any other countries have looked at issues, not so much publishing information about the magnitude and the speciation of birds that are being wacked at these towers, but more looking at what is causing these collisions. If there is something out there that we are not familiar with I would certainly not want to let that slip under the table. Let me jump into another issue – and that is funding. We heard several people comment this afternoon. Holly's [Berland] Agency is in dire need of funds to do a number of things.

Holly Berland – I wouldn't suggest that we are in dire need of funds. I just would say that we are a very small agency with a lot on our platter. But I wouldn't want to say that we are in dire need.

Al Manville – But you don't even have an Environmental Specialist on your staff.

Holly – We don't have an environmental staff per se. Our Enforcement Branch is in the various bureaus and has been reviewing Environmental Assessments along with other enforcement issues, but we do not have an environmental staff nor are we considered a land planning agency with that type of expertise on hand. We would look to somebody like the Fish and Wildlife Service for expertise in these matters.

Al Manville – And unfortunately, at the Fish and Wildlife Service's Migratory Bird Office, we just don't have the funds to really do much on this issue either. And Joe Meyers indicated that BRD would be more than willing to help – in fact, those were his closing comments – but with a caveat: a need for funds. So that gets to the issue of "how are we going to fund this initiative". I must say that at the RESOLVE meeting, Mike Allred and Jim Porter suggested that SBC Wireless would be very interested in looking into helping fund a start-up initiative, and I understand, John [Powers], that Crown Castle International might be interested in helping as well from discussions with Tom last week. This would be great if industry would be willing to pitch in and help here, and I just wondered what that possibility might be

John Powers – That's a loaded question. I think that Bill [Evans] hit the nail on the head when he talked about the real problem has got to be declining songbird populations.
And it's like any other study, what's going is happen as soon as you ask for funding from any source, you're going to have to quantify what the contribution is from any given area of what's causing the decline. And as soon as you get one group of the industry saying "All right, we'll participate", it comes to a question of how do you participate. Participate with staff hours in terms of doing research, do you participate with funds, and is it equally dispersed across the industry? And I think I can speak from a Crown Castle perspective, we're definitely interested in making sure that we are not only an active part of an industry in providing a service, but we want to be in harmony with the community. The points that Kathleen [Rogers] brought up in Virginia – we're very supportive of what they're doing for it helps not only the people in the community, but the wildlife. And I think that every time you talk about the problem, you've gotta hit the exact problem and the exact problem here is the declining songbird populations. And then you've got to try to quantify what's causing that decline. And if there's a way we can participate I guarantee that we're more than willing to participate, but I can tell you right now it's not something we're going to say hey, we're going to fund this whole research.

Al Manville – No, and I'm not suggesting that, but I'm just thinking when Michael Mesure did his presentation this afternoon, it was very interesting, of course in this case, that the Toronto Bank happened to have its logo painted in this photograph which was a bit of an embarrassment. But that aside, this is an issue where there's ownership here. I think that there's a real opportunity for ownership from the communication industry to jump into this, that's why I'm suggesting a partnership much like we have with the electric utility and the wind generation industries. Those are both working, and they're working well, and the mortality issues from both of those concerns are far less than they are with the communication towers.

John Powers – I think the representation of the industry people that you've got here today represents that there's definitely an interest and a concern. I'm speaking across the board from the broadcast through the PCS industry. You've got those people here so there's clearly a concerted effort that we want to be involved. As I said earlier on there's a lot of education that needs to be done on both sides to make sure that we can't make a decision in a vacuum. We're not going to come up with a solution today, I can pretty much guarantee that. But every time you talk about even simple changes to lighting, then you're going to get public outcry from the communities that say "we don't like strobes". And there's always a different case to be involved. So what we need to do is really continue to educate both sides and work as a team and try to come up with a solution.

Al Manville – Here, here. And that was one of the intents of this workshop this afternoon – public education. It's a good start. Alex, you had a question? [no question]

Sheldon Moss – One of the things that stuck me about how this discussion has progressed is it seems in one sense we're almost talking on two parallel tracks and I confess to maybe having been part of starting the discussion about one track. I think there seems to be agreement that there is a need for being able to quantify some of the data, and as John [Powers] suggested, actually document some cause and effects and correlations between the number of towers and the declining populations of migratory songbirds. But I think there's also a recognition that, to the extent that work can be done, and people here know a lot more about this than I do, but this is sort of a long-term process. Something that, and this is probably a modest first step that we would be able to offer from the standpoint of the industry, is while there's certainly a need for science to be involved and decisions need to be made on good science if they have those kinds of implications, but Kathleen [Rogers] also mentioned another process that I was intimately involved with and that was the agreement that the industry essentially reached with the Appalachian Trail Conference and other groups that manage hiking trails that are covered under the National Scenic Trails Act.

That particular agreement stemmed from about a year of ongoing negotiation – the result was really a kind of a voluntary agreement where, both sides, essentially the trail folks and the wireless industry recognized that to develop solutions that everyone could live with, there probably had to be some give-and- take on both sides, and what I'm suggesting is maybe a modest step recognizing while on one track there is a need to pursue the science and get the data, but it seems to be useful for perhaps PCIA, and maybe if other organizations perhaps would be interested, to follow your lead, Al, and try to facilitate a dialog and maybe even on an informal basis where perhaps we could bring in some folks in the industry that really have some knowledge and some folks from like Bill [Evans] that have been leaders on this and continue discussions about, with the idea of finding practical and workable kinds of solutions and recognizing that in many cases the perfect can be the enemy of the good, and I think whatever could result from this sort of informal process could probably be something where there was give-and-take on both sides. But from our organization's standpoint, I think we'd be willing to certainly pursue those kinds of discussions and opportunities for further cooperation.

Al Manville – We appreciate that. Perhaps the forum that might work is this Communication Tower Working Group that we volunteered for at the RESOLVE meeting, and that we need to get moving on. That might be one option we can look at, but I thank you for that suggestion. We're running a little-bit late here, do we have any other suggestions, or comments from our panel members? Thoughts on what next or what we need to do?

Gerald Winegrad – One quick one, Al. I think what needs to be done, I think urgently, is to develop a research protocol from many of the folks that are here with the participation of the industry and the FAA, FCC, and FWS, and the other scientists that have been working on this issue of what are the research needs to resolve the tower-kill problem whether it's looking at the different cones in the birds eyes and their use of color. Whether it's sound, whether it's switching colors of lights, whether it is switching lights on to blink instead of just being solid color, or whatever, but I think that that needs to be outlined – I don't think that that has ever been put down on paper. I think that would be extremely important as well as a detailed costing of that, because I think when you talk to the industry people or agency people, the first thing they are going to say is who's going to pay for this and how much is it going to cost? I think this is extremely important and I think it is something that some of the scientists here could lead.

Al Manville – Good suggestion, Gerald. Well, thank you all very much. I appreciate your effort coming up here. Thank you for your feedback and comments. This concludes our panel discussion.

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