

# **Proposal for Erection of an Amateur Radio Antenna on Marion Island**

**Document Details: ZS8D-PEI99A Version 1.0**

**Dated: 1999-09-30**

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# Executive Summary

Deryck Yelverton, the communications technician on the current Marion Island crew, is a licenced radio amateur. There is world wide interest in contacting him, as the Prince Edward Islands constitute a separate country for amateur radio purposes.

Past radio amateurs have used the substantial antenna installation on the island, and have succeeded to a great extent in meeting demand for the island. However, since the removal of the antennas in 1997, this option is no longer available. It appears that the removal of the old antennas was recommended based on the substantial bird strike hazard, and that the recommendation further included that no non-essential antennas be erected in future for that reason.

This proposal contends that:

## **The antenna constitutes an essential addition:**

- ?? The antenna provides a powerful backup installation to the existing satellite communications. Recent events have proven that the satellite system's reliability is not above suspicion. The proposed antenna provides an efficiency of at least ten times better than the existing HF (short wave) antenna.
- ?? The world-wide demand for the Prince Edward islands will continue to mount, with a likely increase in nuisance applications for permission to operate there.
- ?? South Africa's inability to provide a means to satisfy this demand will be perceived very negatively in a group that, by virtue of its technological nature, includes a high percentage of industrial and government decision makers.

## **The bird strike hazard is manageable:**

- ?? The academic literature indicates a very limited bird strike hazard to solid structures, except that illuminated structures pose a hazard in dark and hazy conditions.
- ?? Wire strikes are strongly dependent on conductor diameter. Wires are a hazard, while thick cables or solid structures are not. The proposed antenna's element diameter is at least ten times greater than that of the original wire antennas. Also, the antenna is closer to the ground and its strike area is only approximately 3% of that of the original wire antennas.
- ?? A significant amount of evidence is available to indicate that amateur antennas do not constitute a bird hazard, even on small islands with very high bird populations. The most relevant case presented is that of Penguin Island off the Namibian west coast, where much larger antennas than proposed here were erected twice in the breeding season (1990 and 1991), without any bird strikes.

**With these two premises in mind, it is proposed** that provisional permission be given for the antenna's erection. The installation could be subject to probation for three months, monitored by avian experts on location. If evidence of an undue hazard to birds is found, the antenna can be taken down and another solution devised for any possible future operations.

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# 1. Background

## 1.1. A brief introduction to Amateur Radio

Amateur radio is a world wide avocation, regulated through the ITU (International Telecommunications Union), an agency of the UN.

Around two million amateurs are licenced world wide. Half of these are in Japan, a quarter in the USA and others in most of the remaining countries on earth. A few pariahs (Bhutan and North Korea are examples) prohibit amateur radio, but most other countries allow and encourage amateur radio.

Most countries regard amateur radio as a valuable resource, both in terms of the increased availability of skilled high-technology manpower and for its emergency communications potential. Indeed, the Communist world of the Seventies and Eighties fostered amateur radio as a competitive endeavour as an avenue to increased awareness and mastery of technology.

A prospective radio amateur must pass an examination on technical and legislative matters of interest to amateur radio. The examination includes material on antennas, interference problems, theory and regulations. For certain licence classes, a Morse code test is also required.

Internationally, amateur radio is administered by the International Amateur Radio Union. The IARU has member societies in most countries. In South Africa, the South African Radio League promotes amateur radio and technological development under the patronage of Advocate Dikgang Moseneke.

Radio amateurs have traditionally contributed substantially to the understanding of radio propagation. Many amateur-built satellites are in orbit and serve to train a corps of amateurs in the art of satellite communications, and indeed in novel techniques of building affordable satellites. The first South African satellite was launched into orbit earlier this year (1999). Much of the Sunsat development revolved around a group of enthusiastic radio amateurs at Stellenbosch University.

Amateur radio also fosters international goodwill. Several stalwarts of international politics, including the recently deceased King Hussein of Jordan and Senator Barry Goldwater of the USA, King Juan Carlos of Spain, the Sultans of Oman and Brunei, and President Carlos Menem of Argentina are all licenced radio amateurs. Every day, thousands of amateurs exchange ideas and build international understanding across the globe.

Amateurs use a variety of communications media, including the ionosphere, artificial satellites, line-of-sight local communications and even reflections off the moon! Interests vary widely, and while some individuals prefer to pursue new techniques to design, build and use equipment, others enjoy operating and communicating, and might use commercially-built equipment, bought off the shelf.

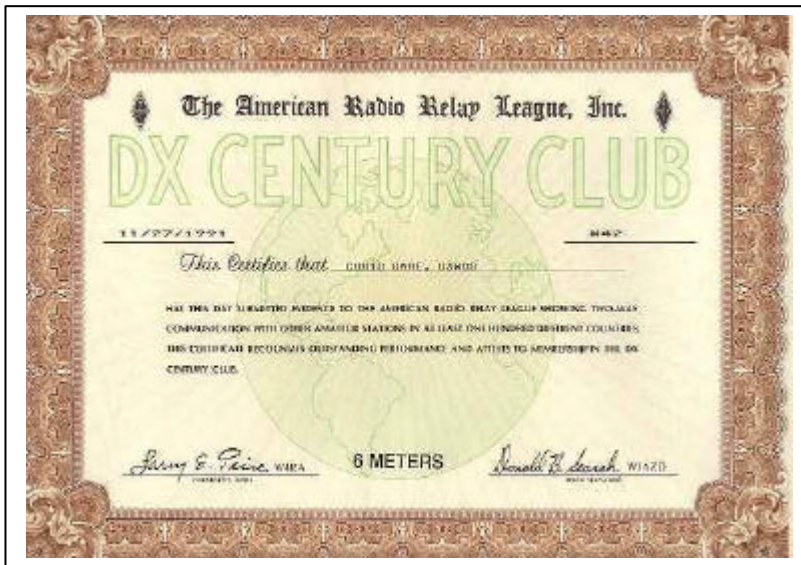
The most common means of talking world wide is to use short wave signals reflected off the ionosphere. Antenna requirements are relatively modest, and contacts anywhere on earth can be achieved with relative ease. In fact, some destinations are at times easier to contact the wrong way round the earth!

Traditionally, High Frequency (or Short Wave) radio provided the only means of communication with Marion Island. Recently, a satellite system has taken over this responsibility, and the huge antennas have been dismantled. However, a limited HF capability is retained on the island, using a simple wire antenna near the base.

## 1.2. Why radio amateurs want to contact Marion

Many radio amateurs pursue contacts in faraway countries, a pursuit known as DX. The term is derived from an old telegraphy abbreviation (for Distance). DX provides an excellent goal to pursue while learning more about propagation and geography and improving one's antenna performance.

The most popular DX goal is to try to contact as many different countries as possible. The most important award to recognise achievement in this pursuit is the *DX Century Club* (DXCC), issued by the American Radio Relay League. Countries are defined according to very specific criteria that include not only political independence, but also geographic separation. There is a list of 322 such entities, that is revised on a regular basis. On this list, the Prince Edward islands are regarded as a separate country because of their distance from the rest of South Africa. Clearly, PEI is not possible to contact, leaving Marion as effectively the only way of making this "country" accessible to radio amateurs.



An example of a DXCC certificate is shown. While contacting 100 countries is relatively easy, the award doesn't stop there. Endorsements are available for working more and more countries, until the ultimate accolade is achieved: The DXCC Honour Roll. To be eligible for the Honour Roll, the applicant must prove having contacted almost all the countries in existence. For example, right now there are 332 countries, and the applicant must prove contact with at least 323 of these countries to make it to the Honour Roll.

Some individuals are simply interested in a specific modulation mode (i.e. how the information is coded onto the signal), or specific frequency bands (e.g. the "6 meters" endorsement on the certificate shown).

When an individual contacts a new country, he or she generally obtains written proof of that contact in the form of a so-called QSL postcard. While Chris de Beer was on the island, he made around 18 000 contacts and I answered around air mail 9000 letters on his behalf. Most of these were from people that had never spoken to the "country" before.

Each year, a DXCC Yearbook is published. Last year, the Yearbook listed Marion as the 28th most wanted country. Clearly, many people still need a contact with Marion, even amongst those that are serious enough about DX to participate in the official awards programme.

Rare countries are generally difficult to activate either for political or for logistical reasons.

Politically rare countries include several pariahs, including North Korea, Bhutan and Yemen. Logistically rare countries are generally little islands that are very difficult to access. A good example in our area is Bouvet Island, a Norwegian possession.

When countries become sufficiently rare, people mount expeditions to activate them. A dozen amateur operators might descend on an island and make tens of thousands of contacts in two weeks or so. Budgets sometimes run into six digits in dollars, especially for inaccessible islands. Clearly, a large scale expedition is difficult to accommodate in an ecologically sensitive case like Marion Island, so resident activity is generally preferred by the authorities. Such expeditions (known colloquially as DXpeditions) are subject to close scrutiny, and will never be conducted without proper official approvals.

Unfortunately, islands like Marion, Macquarie (Australian), Tromelin (French) etc., while all manned with weather and research crews, do not always have a licenced amateur. When they do, the relevant operator is not always equally well trained and motivated. So, some of these islands might become exceedingly difficult to contact. In my case, I need only two countries: North Korea and Macquarie. Macquarie belongs to Australia, and is ecologically and demographically very similar to Marion. It lies just south of New Zealand. There have been resident amateurs in the past few years, but they have always been relatively unskilled and uncommitted. I'll have to wait my turn for the next amateur, and I'm certainly hoping that he'll be adequately equipped!

A good antenna is the most important part of any radio installation. The antenna can amplify received and transmitted signals by as much as a hundred times! You have a ready example to hand, in the reduced reliability of the current dipole system relative to the original rhombics. Clearly, if Deryck has very simple antennas, he will be unable to contact the smaller stations in North America, Europe and Japan, and will be confined to talking mainly to ones that have already contacted Marion previously!

All this background is simply to help you to understand: When an amateur radio operation happens from Marion, it is always a major happening, and many people world wide are very excited.

### **1.3. How amateur radio has been conducted from Marion**

When Marion Island was first manned, the Department of Posts and Telecommunications licenced a club station with the callsign ZS2MI. The licence was held by the Department of Transport, then responsible for the island. All residents were allowed to operate the radio, and amateur radio was a major component of the recreation on the island. The communications equipment to the outside world provided wonderful signals to radio amateurs all over the globe.

During the late Seventies, the Department of Posts and Telecommunications changed its policies. Only licenced radio amateurs would now be allowed to operate ZS2MI. Marion Island immediately started becoming hard to contact. Many years went by when there was no radio amateur on the island, and no contacts were made at all. The level of activity of those that did make it to the island was variable, but a steady trickle of contacts followed for the next few years.

In 1988, the new regulator assigned the ZS8 callsign block to the Prince Edward Islands. Previously, they had been using a specific ZS2 callsign, indistinguishable from those in the Eastern Cape. This new assignment opened the way for individual callsigns to be assigned to residents. However, the first three operators continued the tradition of using the club callsign, now ZS8MI, to identify the station. Peter Sykora was there in 1989/'90, Gerard Everett took over on the next crew, and Christie de Kock was there in 1993/'94.

The periodic re-use of the callsign lead to some confusion. For example, each operator had to provide an address to which correspondence could be sent. Amateurs who require confirmation of contacts are faced with conflicting information and uncertainty, and generally cannot obtain late confirmations because the relevant operators (or indeed their hapless managers) have lost interest.

Chris de Beer was the first to deviate from the use of the club callsign, in 1996/'97. He used the callsign ZS8IR. Deryck was issued the callsign ZS8D before departure. Also, during 1998 the author managed to obtain all the past ZS8MI logs, and is now handling correspondence on behalf of all the previous operators. The information has been widely published in the press and on the Internet.

One thing is certain: The Prince Edward islands continue to become more and more wanted, as the effects of the easy availability of many years ago wear off. Some of the operators, especially Peter Sykora and Chris de Beer, made a large number of contacts, but new DXers continue to breed and demand continues to grow.

## **1.4. Deryck Yelverton's operation**

When I learned five weeks before departure that Deryck was going, I immediately started working frantically to get all the logistics together. Clearly, now that the large antennas are no longer available, he would have to take his own antennas. This requirement added considerable effort to the preparations! Deryck also had to learn Morse code and get his unrestricted radio licence. Preparations required something like 200 man-hours of work.

I was able to obtain funding for equipment and antennas from an international DX foundation within a week, and all the equipment arrived in the country before departure. The antenna was specially manufactured in California to withstand the Roaring Forties, and an amplifier was purchased locally to help strengthen his signal. The funding was to the tune of \$ 3000 (around R 20 000). The fact that this amount could be arranged so quickly even though the operator was inexperienced and an unknown quantity, is an indication of the anticipation that existed internationally when it became known that Deryck was on his way!

I also talked to the responsible staff both in Pretoria and Cape Town prior to the ship's departure and obtained approval in principle to have the antenna erected on the island. However, apparently once on the island Frans Hofman expressed misgivings that the antenna might be an environmental hazard, and prohibited its erection.

There is a short wave antenna on the island. This antenna is extremely inefficient, as it has been designed to provide coverage of all the frequencies likely to be used from the island. In other words, it wastes much of the signal whenever it is used, in order to make it more versatile. However, this antenna is a far cry from the proposed antenna, as will be shown in a later section.

Deryck has been moderately active. However, reports from all over the world indicate that his signals are inadequate to provide global coverage. He has recently exceeded 1000 contacts, half way through his stay. In contrast, Peter Sykora and Chris de Beer each made in excess of 17 000 contacts during their stay on the island.

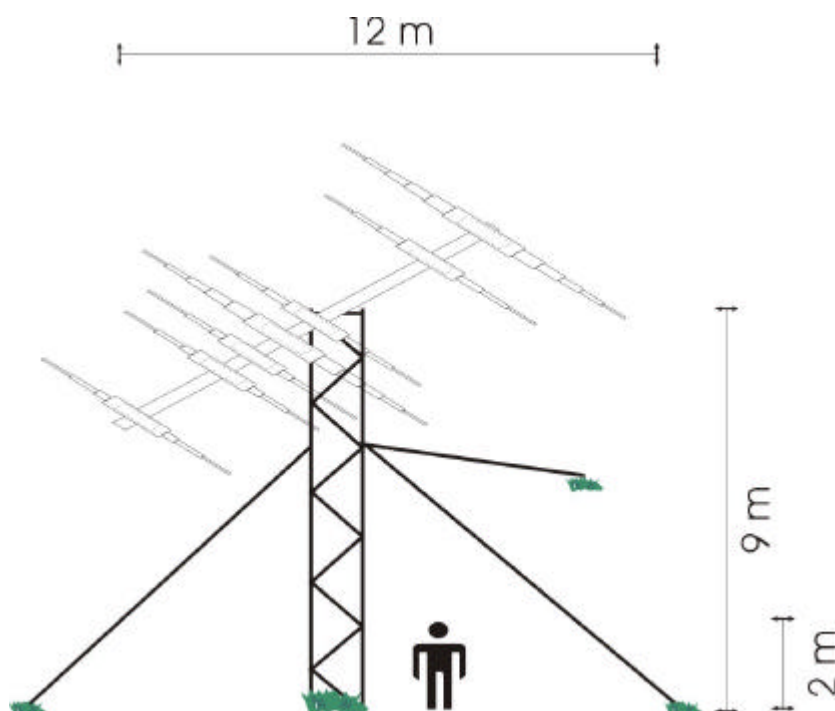


## 2. The proposed installation

### 2.1. Physical description

The antenna was manufactured specially for high wind conditions. The manufacturer, Force 12 Antennas and Systems Inc. of Paso Robles, California, USA, assembled the antenna from aircraft alloys, using increased wall thickness materials to ensure survival in the Roaring Forties.

The antenna consists of seven elements spaced on a 5,5 m boom. The turning radius is 6,0 m. The boom diameter is 51 mm, and the elements vary between 14 and 25 mm in diameter. Every part of the antenna is clearly visible to the naked eye at a distance of at least 25 m. There are no wires or other “invisible” parts. The elements, although just the aluminium would have been clearly visible, have been marked with brightly-coloured reflecting tape at regular intervals to improve their visibility by day and by night.



The picture shows a schematic drawing of the antenna installation. In real life, the tower is vertical and the antenna is horizontal. In other words, while the antenna appears slanted in the picture, it is in fact planar and can be easily avoided as a unit by a bird in flight. A human (size 2 m) is shown for perspective. The antenna's boom and elements are made from aluminium tubing and can be clearly seen at a distance.

The installation is structurally sound:

- ?? The mast coupling was manufactured prior to departure in Gauteng, and provides a substantial safety margin.
- ?? The tower was prepared during the re-supply visit by workers of the Public Works Department, using tower sections available on site. Only nine metres of tower will be used, as opposed to the original height of 24 m. Certification has been obtained from the manufacturers, Henry van Reenen and Associates, that the tower will easily withstand the expected wind load.
- ?? The tower will be erected on an existing concrete block near the base buildings.

A very similar antenna is available for inspection at the author's station near Pretoria.

## 2.2. Advantages

The antenna system will provide a useful emergency backup capability in the event of a failure of the primary satellite communications system. With the Year 2000 problem on the horizon, such a requirement is not out of the question. Recent personal communications with Roland Mensch of the Siemens Year 2000 international task group indicated that both private companies and government organisations are expecting widespread power failures with the advent of the new year. Concerns revolve around possible malfunctions of the demand control computers, and around unpredictable swings in demand with the new year. On the one hand, heavy demand due to lighting and sound equipment is expected. On the other, many individuals are likely to shun the use of machinery at least for a few days, possibly leading to a severe downturn in demand. In either case, much or all of the national power grid can be paralysed. Eskom's contingency plans are known to include amateur radio, as well as mobile units of the National Defence Force. Both these components will be able to communicate with the island in such an event. Clearly, the maintenance of communications is imperative in the interests of weather forecasting.

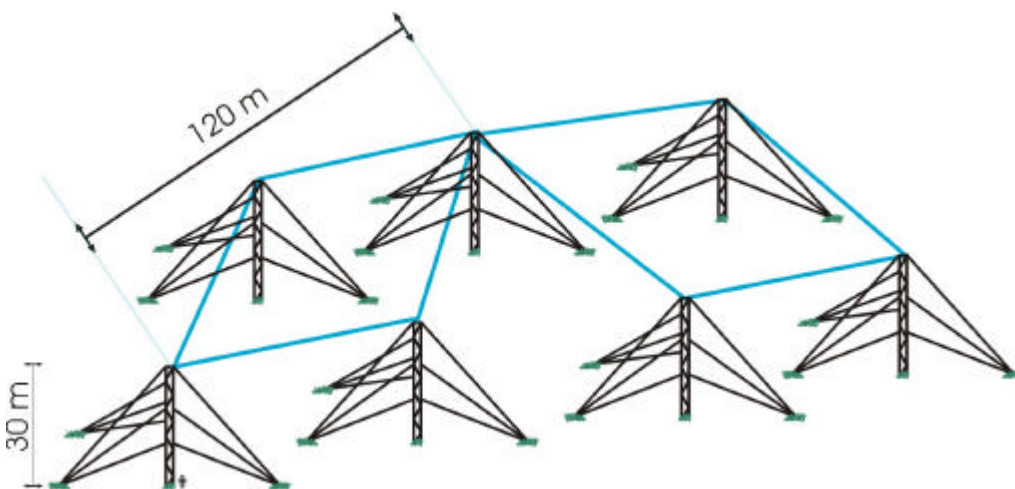
To quantify the improvement that the antenna would provide over the existing antenna, we need to resort to some technical jargon.

In the interests of accuracy: The manufacturer specifies the antenna gain as 10,2 to 10,6 dBd on the three primary operating frequencies. The existing wide-band dipole has a gain of less than  $-3$  dB in its operating range. The resulting gain of this antenna relative to the existing antenna is therefore more than 13 dB.

In plain English: The proposed antenna provides at least roughly 100 times as much signal as the existing one does. To achieve the same effect, the power output at both ends of the circuit would have to be multiplied by 100. Using the existing 400 W power output as a basis, the power output would have to be increased to 40 000 W, or 40 kW, a level not achievable in any but broadcasting circles, and certainly not from the island's existing power supply. An input supply of around 100 kW would be required. The total generating capacity of the island's primary ADE generator is only 130 kW!

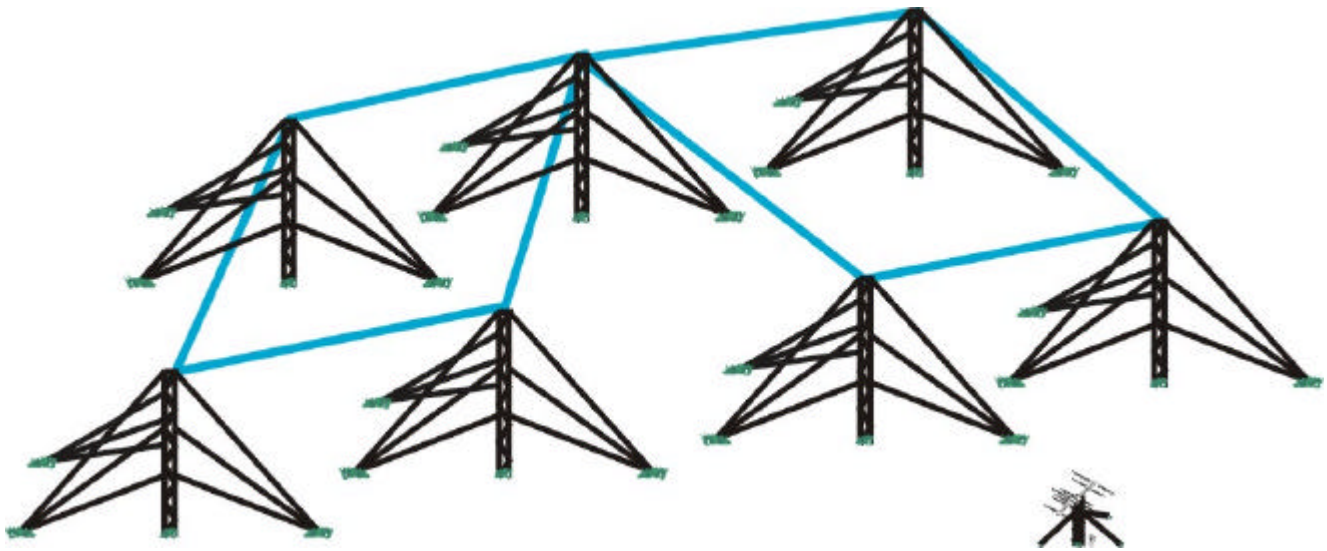
## 2.3. Differences relative to the previous installation

In the past, the island featured rhombic antennas to cover the short wave (HF) spectrum. These antennas were around 30 m high. There were two such rhombics, to provide coverage to Pretoria and to other directions if required. The antennas consisted of thin wire (less than 2 mm diameter). A total of almost 500 m of wire was suspended from seven towers. The thin wire was difficult to see, even from relatively close to the towers themselves.



The picture shows a schematic representation of the original antenna installation, compiled from verbal descriptions and from engineering drawings from the tower manufacturers. While the exact configuration may be slightly different, the major dimensions and the general shape of the antennas can both be taken as correct. The diamond shaped patterns were the wire antennas, while the towers and their guy wires merely served to suspend the wires. A human shape is included for size comparison (below the tower on the lower left).

The proposed antenna resembles an overgrown television antenna. Its tubing parts are between 14 and 51 mm in diameter. No part of the antenna will be more than 10 m from the ground. The tower will be installed on an existing concrete base near the inhabited buildings. No part of the antenna is invisible from a distance of 25 m.



The picture shows a comparison of the sizes of the two antennas, on approximately the same scale. The previous installation dominates the picture, while the proposed antenna can be seen on the lower right. Once again, a human being is included below the proposed antenna for size comparisons.

Clearly, the proposed antenna is in a completely different league from the original wire antennas. Accordingly, the bird strike hazard is expected to be correspondingly reduced.

The following section contains an attempt to quantify this reduction in risk.

## 3. The Bird Strike Hazard

### 3.1. Bird strikes on towers

Horror stories about bird strikes on antenna towers exist in the literature. However, these stories invariably relate to:

?? Very tall towers, typically 300 m or more, illuminated and supported by guylines.

?? Nighttime conditions.

?? Migration season.

?? Fog, mist or other light-scattering conditions.

Birds fly into the area illuminated by the tower lighting, become disorientated because of the scattering of light, and then fly in circles around the tower. Because of the presence of the guy lines and the poor visibility, the birds are decimated until very few remain.

No other evidence of substantial bird strikes on communications towers could be found.

Substantial anecdotal evidence exists that birds benefit from the presence of towers. There is no noticeable distinction between their behaviour towards towers and towards trees of similar stature. Sitting birds use antenna elements as perches, and flying birds easily avoid the antennas and their support structures. Many examples of such observations can be found in Appendix B, as well as in the academic literature.

Marion Island is not unique in its combination of avian and amateur radio interests. Many little islands that are rare for radio amateurs are also home to large numbers of birds. Examples include:

?? Aves Island (Bird Island), in the Caribbean, belonging to Venezuela.

?? Clipperton, a French possession in the Pacific off Mexico.

?? Kingman Reef and Palmyra Atoll, in the Pacific, both US possessions.

?? Penguin Island, off the Namibian coast, regarded as a separate country for amateur radio when still South African territory.

All of these islands have seen occasional expeditions with lots of amateur radio antennas. Comments on expeditions to several of these islands are presented in Appendix B and in section 3.4.

### 3.2. Bird strikes on conductors

Bird strikes on conductors are an ongoing problem in the vicinity of power and communications lines. These problems generally occur only when the power lines are located at points where birds pass in great numbers. Examples would include line features that separate nesting and scavenging areas. No substantial strike hazard exists when the lines are not in such close proximity to regular flight paths. Adjacent vegetation or natural features serves to reduce the strike hazard substantially, while lines at right angles to the flight path present a greater hazard than those parallel to the flight path.

Most germane to this discussion, several sources indicate that conductor diameter is a major factor in strike risk. Specifically, the ground wire is most often struck on power lines. The ground wire typically carries little or no current, and is consequently much thinner than the other lines. Helicopter pilots know this wire colloquially as

the “killer wire”, as it is generally above the other conductors and awaits the unwary pilot who clears the thick conductors just barely. Birds are clearly subject to similar problems!

Finally, much evidence exists to suggest that birds will deal with obstructions *en masse*, avoiding groups of conductors with as much facility as single conductors.

These observations lead to the premise that a bird will avoid the entire structure, provided that it is clearly visible.

Appendix A contains references to successful attempts to mark wires with markers, reducing the bird strike hazard substantially.

### **3.3. The proposed antenna in relation to towers and conductors**

The proposed antenna is too low to fall into the category identified as hazardous to bird life. Also, it is not artificially illuminated.

The antenna itself contains no components of small diameter, and every part of it is clearly visible from at least 25 m.

The antenna is small enough (turning radius of 6 m) to be avoided in its entirety by a bird in flight. As has been shown in powerline studies, birds would typically identify and avoid components in such close proximity as a single unit.

Finally, the elements have been marked with brightly coloured reflective tape to improve their daytime and nighttime visibility.

A direct comparison of the proposed antenna vs. the previous antenna installation (prior to 1997) follows:

- ?? The proposed antenna has a total maximum diameter of 12 m. The previous antennas consisted of several widely-spaced wires, some of which had dimensions exceeding 120 m. The total length of wire to be avoided was around 400 m. The proposed antenna thus presents only around 3% of the strike area of the previous installation.
- ?? The conductor diameter is between 14 and 51 mm, while the original antennas consisted of thin wire that was difficult to see at a distance. Even humans on the ground, directly below the antenna, had to look carefully to see the wires.
- ?? The previous installation contained wide spacings, of the order of 50 m. This spacing is wide enough to cause a bird in flight to have to make two avoidance efforts in quick succession. The proposed antenna, on the other hand, is a single unit that can be avoided as such.
- ?? The proposed antenna is much lower (around a third) than the original antennas, much reducing the likelihood of a bird in flight being surprised by the presence of the antenna.
- ?? The elements have been clearly marked, using brightly coloured reflective tape.

In the light of all these factors, the proposed antenna is not expected to present any more than a minute fraction of the risk to birds that the previous installation did.

### **3.4. Case study: Penguin Island**

During 1990 and 1991, the author led two expeditions to Penguin Island off the Namibian coast. At the time, the Penguin island group (including Penguin Island itself) was in South African hands. Because of the islands' separation from the South African mainland, they counted as a separate country from South Africa and Namibia.

Both expeditions took place in December, a time regarded as ecologically sensitive. The island was under control of South African Nature Conservation, in the person of Dr Tony Williams. Dr Williams, then based in Walvis Bay, is a keen bird watcher, and has spent time on Marion Island.

Once the nature of the expedition was explained to Dr Williams, he granted permission for a group to visit the islands.

The first group consisted of five men from South Africa, the USA and Finland. During a stay of six days, four towers with antennas resembling the proposed installation were erected. 33 000 contacts were made. Not a single bird strike was noted on any of the antennas, even though the density of nesting seabirds must have exceeded one per square metre in the vicinity of some of the antennas. The stay included a period of two days when the wind never dropped below 30 m/s (about 60 knots), and a day with continuous foggy conditions.

Dr Williams visited the island during the operation, and expressed his satisfaction with the measures that had been put in place to ensure that the birds were disturbed to the smallest extent possible.

Clearly, his assertion had been heart-felt, for permission for the second group was granted without hesitation, a year after the first. The second group consisted of four men and one woman from South Africa. A similar antenna installation was erected and used over a seven day period. 23 000 contacts were made. Once again, no bird strikes were noted.

Several other examples of expeditions to small islands with large bird populations are noted in Appendix B. The accounts all show clearly that no bird strike problems were experienced.

## 4. The Proposal

### 4.1. Summary of preceding discussion

One could argue that most activities are fraught with risks. Clearly, one has to weigh these risks against the attendant benefit before deciding whether to accept the risks and proceed with the actions.

The preceding discussion has shown that there are many benefits, and that the risks are minimal. The salient points are summarised below.

#### **The antenna constitutes an essential addition:**

- ?? The antenna provides a powerful backup installation to the existing satellite communications. Recent events have proven that the satellite system's reliability is not above suspicion. The proposed antenna provides an efficiency of at least ten times better than the existing HF (short wave) antenna.
- ?? The world-wide amateur radio demand for the Prince Edward islands will continue to mount, with a likely increase in nuisance applications for permission to operate there. Other authorities in control of similar entities are known to be faced with many dozens of such requests annually, often backed up by government influence and other factors that cannot simply be ignored.
- ?? South Africa's inability to provide a means to satisfy this demand will be perceived very negatively in a group that, by virtue of its technological nature, includes a high percentage of industrial and government decision makers. This perception will be exacerbated by the fact that offshore funding was provided by voluntary organisations to supply antennas and equipment, based on verbal permission for the antenna's erection.

#### **The bird strike hazard is manageable:**

- ?? The academic literature indicates a very limited hazard of bird strikes to solid structures. Exceptions are illuminated, guyed antenna structures, which pose a hazard in dark and hazy conditions, and windows on internally-illuminated buildings, which are known to cause problems at night.
- ?? Wire strikes are strongly dependent on conductor diameter. The proposed antenna's element diameter is at least ten times greater than that of the original wire antennas. Also, the antenna is closer to the ground and its dimensions are only approximately 3% of those of the original wire antennas.
- ?? A significant amount of evidence is available to indicate that amateur antennas do not constitute a bird hazard, even on small islands with very high bird populations. The most relevant case presented is that of Penguin Island off the Namibian west coast, where much larger antennas than those proposed here were erected twice in the breeding season (1990 and 1991), without any bird strikes.

### 4.2. Proposal

It is proposed that the Prince Edward Islands Management Committee allow the erection of the antenna with immediate effect. If environmental concerns have not been adequately addressed, a three month probationary period with clearly defined monitoring goals can be established.

The monitoring can easily be conducted, as several avian observers are available on the island to conduct impartial inspections. The help of an organisation like the Avian Demography Unit at UCT could be enrolled in this regard.

# Appendix A: Bird Strike References

## Web sites with good information

**www.abcbirds.org:** The American Bird Conservancy. This site contains much useful information on bird strikes to communications towers. The data collected clearly points to the importance of height (in the order of several hundred metres).

**www.towerkill.com:** A Web site dedicated to bird kills on communications towers. An explanation of kill mechanisms is found on this site:

Two independent mechanisms of bird mortality occur at communications towers. The first is when birds flying in poor visibility do not see the structure in time to avoid it (i.e., blind collision). This is more of a threat for faster flying birds such as waterfowl or shorebirds; variables in bird vision and flight agility are factors-slower, more agile flying birds, such as songbirds, are not as likely to succumb to blind collision. This mechanism can occur during the day when the tower is obscured by fog, or at night, theoretically more often with unlighted towers.

Communications towers that are lighted at night for aviation safety may help reduce bird collisions caused by poor visibility, but they bring about a second mechanism for mortality. When there is a low cloud ceiling or foggy conditions, lights on a tower refract off water particles in the air creating an illuminated area around the tower. Migrating birds have lost their stellar cues for nocturnal migration in these weather conditions. In addition, because they are flying beneath a relatively low cloud ceiling, they have lost any broad orienting perspective they might have had on the landscape. When passing the lighted area, it may be that the increased visibility around the tower becomes the strongest cue the birds have for navigation, and thus they tend to remain in the lighted space by the tower. Mortality occurs when they run into the structure and its guy wires, or even other migrating birds as more and more passing birds cram into the relatively small, lighted space. It is important to clarify that the lights apparently do not attract birds from afar, but rather tend to hold birds that pass within a certain illuminated vicinity.

<http://www.jsonline.com/news/state/aug99/bird27082699.asp>

This site lists a news story about bird strikes to towers in Wisconsin. The article reads in part:

Communications towers are springing up by the thousands across the nation, spurred by a growing demand for cellular phones and an increasing number of TV and radio stations, but the boom is having an unforeseen impact - millions of songbirds are dying when they fly into the towers.

An estimated 4 million songbirds-particularly warblers, thrushes and vireos-are banging into towers and guy wires each year when they become disoriented in bad weather during migration in the spring and fall.

No one is sure why the birds are dying, but there's speculation that the red or white lights that are mandatory on towers taller than 199 feet are somehow attracting birds in fog and misty weather. Wisconsin environmental officials are so concerned about the deadly problem that the state has joined a national group that's trying to understand why it's happening and find solutions.

The state's efforts are being led by Steven Ugoretz, a Department of Natural Resources environmental analyst, who is part of a U.S. Fish and Wildlife Service team that's looking at the issue.

Ugoretz also said DNR officials are talking about launching an independent statewide effort to deal with the bird killings as well.

"The problem has been out there for a while. The phenomenon of birds hitting man-made structures is as old as man-made structures. Birds have been hitting lighthouses and tall buildings for years," Ugoretz said. "But the problem is the proliferation of towers that's happening right now. We've got more towers and higher towers, and as you get higher and higher, you get closer to the birds' normal flying range."

<http://www.fws.gov/r9mbmo/issues/tower.html>

This page, part of the US Fish and Wildlife Service site, contains a large bibliography of references. Each reference includes a short summary. Many case studies are shown, mostly from very tall illuminated guyed towers.



## Academic literature

[A brief reference of the specific points extracted from the reference is included. Clearly, the texts cited also cover other relevant subject matter].

**Avery, ML (ed.):** *Impacts of transmission lines on birds in flight*, US Fish and Wildlife Service, Washington DC, 1978. A piece contributed by LS Thompson describes how birds cross clustered obstacles in a single manoeuvre, rather than a series of manoeuvres. Clustering conductors is preferable, as they become more visible and easier to avoid.

**Avian Power Line Interaction Committee (APLIC):** *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994*, Edison Electric Institute, Washington DC, 1994. Chapter 3 (Factors influencing Collisions) contains a description of species and environmental characteristics influencing the likelihood of collisions, and the ways in which birds avoid collisions.

**Faanes, CA:** *Bird behavior and mortality in relation to power lines in prairie habitats*, US Fish and Wildlife Service General Technical Report Number 7, 1987. Cites the static wire on powerlines as being most often struck, a clear reference to the influence of conductor diameter on visibility.

**Lewis, JC (ed.):** *Proceedings of the 1985 crane workshop*, Platte River Whooping Crane Maintenance Trust, Grand Island, Nebraska, 1985. An article by WM Brown, RC Drewien and EG Bizeau, titled *Mortality of cranes and waterfowl from powerline collisions in the San Luis Valley, Colorado* covers the effect of conductor diameter, showing that the static wire is most often struck.

**Scott, RE, LJ Roberts and CJ Cadbury:** *Bird deaths from powerlines at Dungeness*, British Birds Vol. 65 pp.274-286, 1972.

**Willard, DE, JT Harris and MJ Jaeger:** *The impact of a proposed 500kV transmission route on waterfowl and other birds*, Public Utility Commissioner, Oregon, USA, 1977. Cites the smaller diameter of the static wire as a major factor in bird collisions.

## Miscellaneous references

**Transcript of a letter from Wild Bird Center, New England, USA (letterhead copy available):**

October 17, 1996

Mr. Fred Hopengarten  
Volunteer Counsel  
American Radio Relay League  
6 Willarch Rd.  
Lincoln, Mass. 01773

Dear Atty. Hopengarten:

Thank you for calling Wild Bird Center with your question.

The question you asked is: "Do residential amateur (ham) radio antenna support structures and antennas, at heights less than 200 feet present a danger to wild birds?"

Our best answer is that while life is imperfect, nature is never 100% predictable and birds die for many reasons. Ham radio structures-even with wires hanging from them-do not present an unusual or increased risk to birds. America is filled with antenna structures for television, cellular telephone, amateur radio and many other uses. During our combined experience of three years in business and ten years of bird watching, we have never seen a bird crash into such a structure, nor have we ever observed a dead bird near the base of any antenna structure. In fact, the leading killers of local bird life are windows on buildings and domestic cats.

Birds that migrate during the dark hours typically fly at an altitude that exceeds that of most manmade structures. The vast majority of birds possess keen eyesight - many of them superior to ours. Anyone who has watched a bluejay maneuver through a dense forest full of trees knows that collisions with solid objects are rare.

If you have further questions, or you need birding supplies, we'd welcome your call.

Sincerely,

Pat & Steve Wedge, Owners

**Transcript of letter from Massachusetts Audubon Society (letterhead copy available):**

Massachusetts Audubon Society  
c/o Center for Biological Conservation  
208 South Great Road  
Lincoln, MA 01773

617/259-9500; FAX 617/259-1040

September 20, 1996

Atty. Fred Hopengarten  
Volunteer Counsel  
American Radio Relay League  
Six Willarch Road  
Lincoln, MA 01773-5105

Dear Atty. Hopengarten:

You have asked about whether amateur radio support structures and antennas, at heights no greater than 200 feet and not lighted, pose an undue hazard to birds. The short answer is probably not.

This question comes up from time to time, usually in the context of very large microwave antenna towers, or 1000+ foot [over 300 m] TV towers. As best I know, even in that context, the Massachusetts Audubon Society has no official position that such structures pose a substantial hazard to birds.

In general, those of us who love birds are not concerned about small towers. Really tall structures, such as the Prudential Center with its reflective glass, or 1000 foot [300 m] towers with lights, may, in peak months of migration, when nocturnal birds are lured below the clouds, then present problems on occasion. Such illuminated structures can result in tower collisions under conditions of low overcast or fog. Even with such concerns in mind, however, the incidence of encounter with an amateur radio tower by migratory birds is probably a non-issue.

I have seen dead birds as a result of a collision with a five foot high chain link fence, so birds can theoretically collide with anything. There are lots of trees, poles, stanchions, and the like out there, but a relatively low number of amateur radio towers. Given the heights (less than 200 feet [30 m]) of these towers, danger to birds from amateur radio support structures is undoubtedly minimal.

Sincerely,

Wayne Petersen, Field Ornithologist

**Transcription of Letter from Steve Fairfax, MIT (Massachusetts Institute of Technology)  
(fairfax@alum.mit.edu):**

Letter directed to Fred Hopengarten (see above).

I looked into this several years ago during my stint at Failure Analysis Associates. The basic answer is this: Birds have lightning-fast reflexes and very keen eyesight. They can fly through a thick woods they have never seen, in almost any kind of light or weather, and never touch a branch until they are ready to land. When they are ready to land, they will land precisely on the branch they want. If they are gregarious birds, like crows, that spot is often a matter of inches away from another bird. They can spot an insect or seed from scores of yards away, fly through a maze of branches, vines, and twigs, and land within inches of their target, every time.

Why are they so good at this? It's what they do. They are birds. Their flight control systems have evolved for millions of centuries and are far more sophisticated and complex than the best mankind has to offer. Birds will almost certainly continue to outperform human aircraft controls for a long time to come.

Ham radio antennae, cell towers, telephone poles, tall trees, cliffs, wires, and other obstacles present no hazard to birds. Extremely fine wires that are hard to see can potentially trick them, but remember that their eyesight is several times keener than ours, and their idea of "extremely fine" is correspondingly smaller than ours. Tower guys may make attractive roosting spots, but they pose no hazards. It requires specially constructed "mist nets" to catch birds in flight. Modern "mist nets" are so fine that even the birds can't see them in dim light, but it took the development of things like Kevlar to make threads that were fine enough and strong enough for a practical net.

The one hazard that does confuse birds is reflection of skylight from glass windows and building facades. Birds use their eyes to determine their flight path, and sometimes will head for daylight reflected from a window, flying into it at full speed. Some tall buildings hurt dozens of birds annually that way, and anyone who keeps a backyard birdfeeder has probably seen or heard a bird smack into their windows. This is due entirely to the false cue given by reflected skylight, not to the bird's clumsiness. One can completely eliminate birds flying into windows by putting a silhouette of a hawk on the window, which the birds will see and avoid.

As to more authoritative sources, there are tens of thousands of articles in the literature on bird flight, published over the last 300 years or more. Chet Raymo answered a question along the lines of "How can a bird fly through the trees without hitting anything?" in the Boston Globe about a year ago. His answer was very close to mine, though more succinct.

Anyone (and I do mean anyone) who has closely watched birds fly, land, feed, quarrel, and mate knows that birds are masters of their aerial environment. Mankind must resort to things like guns, rapidly spinning wind turbine blades, or high-speed aircraft to make a serious threat to a flying bird.

The Audubon Society possesses the necessary information and credentials, but they have agendas that may discourage them from supporting your case [However, they did support the case, as indicated elsewhere]. The fundamental point is this: birds fly using their eyes, and they can easily see and avoid virtually any obstacle we choose to put up.

A few birds, like homing pigeons, use the earth's magnetic field for navigation. Navigation is not the same as flight control. Big chunks of steel may distort the local magnetic field enough to cause a pigeon to veer "off course" but so do many other things, including air currents, natural deposits of iron ore, and the sight of tasty seeds or fresh water on the ground below. Once they have flown out of the immediate vicinity of the steel, they will find their way home.

Last but not least: if towers were hazardous to birds, we would have found out about it 50 years ago, if not earlier. There have been towers and avid bird watchers around for a long time.

Here are a few citations: I like the first-the big predator birds *like* the densest towers for building nests!

Number: BGS193017135  
Author: Steenhof, Karen.; Kochert, Michael N.; Roppe, Jerry A.  
Title: Nesting by raptors and common ravens on electrical transmission line towers.  
Source: The Journal of Wildlife Management v. 57 (Apr. '93) p.271-81 bibl il map.  
Abstract: A study of the attraction to artificial structures in nesting populations of raptors and common ravens (*Corvus corax*). A 596-km segment of a 500-kV transmission line in southern Idaho and Oregon was the chosen site. The breeding success of raptor and raven pairs, their fidelity to a nest site, and the condition of the nest on successive years were assessed by helicopter survey. Those towers with a dense steel latticework, which afforded the nest greater protection from wind, were preferred. Provision of stable nesting substrates improved raptor nesting opportunities. Guidelines on how utility companies could increase nest site availability are provided.  
Standard No: 0022-541X  
Date: 1993  
Place: United States  
Record Type: art  
Contents: feature article  
Subject: Birds of prey; Birds-Nesting; Ravens; Electric lines-Right of way.

Number: BGS198007956  
Author: Osborn, Robert G.; Dieter, Charles D.; Higgins, Kenneth F.  
Title: Bird flight characteristics near wind turbines in Minnesota.  
Source: The American Midland Naturalist v. 139 (Jan. '98) p. 29-38 bibl.il.  
Abstracts: During 1994-1995, we saw 70 species of birds on the Buffalo Ridge Wind Resource Area. In both years bird abundance peaked in spring. Red-winged blackbirds (*Agelaius phoeniceus*), mallards (*Anas platyrhynchos*), common grackles (*Quiscalus quiscula*), and barn swallows (*Hirundo rustica*) were the species most commonly seen. Most birds (82-84%) flew above or below the height range of wind turbine blades (22-55 m). The Buffalo Ridge Wind Resource Area poses little threat to resident or migrating birds at its current operating level. Reprinted by permission of the publisher.  
Standard No: 0003-0031  
Date: 1998  
Place: United States  
Record Type: art  
Contents: feature article  
Subject: Wind power; Birds-Minnesota; Birds-Flight.

Number: BGS190022909  
Author: Cuthill, Innes.; Guilford, Tim.  
Title: Perceived risk and obstacle avoidance in flying birds.  
Source: Animal Behaviour v. 40 (July '90) p. 188-90 bibl il.  
Standard No: 0003-3472  
Date: 1990  
Place: United Kingdom  
Record Type: art  
Contents: feature article  
Subject: Birds-Flight; Optimal foraging theory.

Regards,

Steve

## Appendix B: Amateur Radio on Islands with Birds

Several amateur radio operators have sent anecdotal observations of amateur radio operations from small islands with large bird populations. Some of those accounts are reproduced below.

Most of these islands are nature reserves or otherwise subject to strict conservation measures. All are uninhabited. In most cases, permission would have had to be obtained from the administering body, who would have had to be satisfied that there was no substantial threat to the local bird life.

Explanatory notes are included in square brackets [like this] where required.

### Michael C. Goode N9NS, USA

Mike can be reached by email at [mgoode@in-motion.net](mailto:mgoode@in-motion.net).

#### First letter:

As a DXpeditioner I have had beams and wires up at several places that were swarming with birds - Clipperton in 1992, Kingman Reef/Palmyra in 1993 and last year Kure/K7K. On all these trips we wondered if the birds would have problems with the antennas so made some effort to watch. I have not seen a single instance of a bird colliding with an antenna, or found one injured.

On Clipperton one of our beams was nearly broken by a dozen birds sitting on it, got a cute picture of that. On Kingman Reef a bird flew into the side of Pete's [Peter Meyer, another radio amateur who travels with Mr Goode] head one night, nearly knocked Pete out. That is only instance I recall of a bird flying into something. And Kure you may know, is a wildlife sanctuary, where we had to convince the Hawaii State Forest and Game service the antennas would not hurt the birds, they kept watch and nothing was noted.

I could even add my father was an Air Force Communications Officer stationed on Johnston Island and some other Pacific bases after WW2. He was in charge of installing huge antenna systems on those islands and his comments about the birds was they kept sitting on the wires in such numbers the antennas broke.

#### Second letter, after being asked to expand:

I recently read your message about the antenna restriction imposed on your Amateur Radio friend on Marion Island. I would like to relate some of my experiences to support allowing an antenna to be erected there.

I have been a licensed Radio Amateur since 1966 and have long been interested in all aspects of science. As such I have two college degrees, one in Electrical Engineering (my profession) and one in Geology. I also study many other branches of science and enjoy the outdoors to the extent I am something of a naturalist and conservationist.

I also enjoy traveling and that has led me to take some expeditions to some rather remote places in order to activate them on the Amateur Radio bands. I would like to discuss two of these places which are islands and my observations on the interaction of the birds living there with our radio activities.

The first is Clipperton Island, which is the only coral atoll in the eastern Pacific. A French possession, it is an uninhabited patch of bare coral rock and sand shaped like a ring surrounding a lagoon about 2 miles [3 km] across. The only vegetation growing on the island are coconut palms, most of which are concentrated in a single small "forest" about 120 meters in extent on the northwestern part of the island. In March of 1992, I accompanied 8 other radio amateurs on an expedition to Clipperton. We set up a campsite adjacent to the "forest" and erected four beam antennas to a height of about 8 meters [each very similar to the proposed

antenna], two vertical antennas about 10 meters high, and 3 wire antennas, the longest of which was 80 meters long. We remained on the island for eleven days.

As you might expect, Clipperton has a large population of seabirds. I spent some time studying these birds. I should point out it was of some concern to us that the birds might be hurt by the antennas, and *vice-versa*! The majority of the birds present were masked boobies. I estimated they compose about 80 to 85 percent of the bird population. Most of the remaining birds were brown boobies. These two species were nesting primarily on the bare rock. The only other species of any numbers were frigate birds, which were nesting in the "forest". There was one flock of about eight sooty terns or noddies and exactly two fairy terns, which had a nest on an old WW II water tank near our camp.

Reports from previous visitors to the island mention "millions of seabirds". I was rather sceptical of this number and endeavoured to make an accurate census. I walked around the island and selected three areas which seemed to be occupied by a typical number of birds. I paced off the size of these areas and counted the number of birds in them, thus coming up with a birds-per-square-meter average for the island. I then multiplied this by the area of the island and came up with a figure of 33 000 birds sitting on Clipperton at any one time. A majority of these birds were unattended chicks, the parents being out to sea, so I concluded about three times this number of birds actually called the island home-around 100 000.

I cannot say what number of these were flying about at any time but it did appear there were more birds flying around our camp than in other parts of the island. I believe they were attracted by the large number of trees. I did make the following observation when we left the island. Looking at our tents and other equipment which sat outside the entire time, I estimated they were between 25% and 33% covered with bird droppings (being "bird-bombed" was common on the island, always wear a hat!). This means on average every square centimeter of the island is hit once a month, at least around our campsite, so there must be a lot of birds flying about and they seem to be able to avoid the antennas.

I make the above points to give credence to the following statement: During our 11-day stay not one bird was found injured. Remember we were aware this could be a problem and were watching. This seems logical since the birds obviously could avoid the trees, and most of our antennas had elements with a thickness comparable to the palm leaves. In fact the boobies seemed to like perching on our beams, I have a picture of a dozen or so on an antenna at one time. Only the wire antennas might be more difficult to see, but as I pointed out, no problems were observed.

A second island with a large bird population I have operated from is Kure Atoll, about 2000 km. west-northwest of Honolulu [Hawaii]. The island here is about 2000 meters long and 500 meters wide at its widest point. This atoll is wildlife sanctuary operated by the state of Hawaii and visiting is not permitted. In November of 1997, six amateur radio operators accompanied four officials from the Hawaii State Forestry and Game Commission to Kure. These officials conducted surveys and did banding of the birds while we amateurs were allowed to operate. The Hawaii officials were quite concerned about our antennas being potential hazards to the bird population. The operation was only possible after extensive negotiations with the officials, and once on the island we were told where we could set up our equipment and to keep the antennas to a minimum. We were allowed to set up two stations, consisting of three beam antennas at a height of 8 meters [each similar to the proposed antenna] and three vertical antennas about 10 meters high. One of our stations was set up by the shore along the lagoon and the other inland. I can report that again no birds were found injured by ourselves or the state officials.

I don't know the circumstances on Marion Island but my experiences described above would suggest an antenna would pose no problem for the island's bird population.

I would also ask the philosophical question: Is it proper to protect animals from all hazards? If Darwin's Theory of "Survival of the Fittest" is correct, one could say it may not be good for the species to allow all members to survive. In this case should birds with poor eyesight or who are clumsy fliers be allowed to pass those genes on to future generations?

**Third letter:**

I took the liberty of mentioning your problem with the professional ornithologist (Reginald David) that accompanied us on the Kure Island trip, below is the response I got. Looks like he would be willing to provide some input if you want me to pursue this.

*Aloha Mike:*

*No we did not observe any negative interactions between seabirds and your antennas on Kure. A lot depends on the species of seabirds present at a colony, the size, height and number of guy wires present on an antenna. Another consideration is whether or not the antennae are being used during a full moon period, or on a very dark night. Whether the Antenna are lighted etc.*

*In Hawaii interaction between night flying seabirds and utility structures is considered the second leading cause of mortality to nesting pelagic seabirds. The placement of the "barrier" in relation to the general topography and the presence/absence of exterior lighting all play major parts in the magnitude of potential impacts.*

*Let me know if you need more specific information-citations and the like.*

*Aloha*

*Reg*

*Reginald E. David  
P.O. Box 1371  
Kailua-Kona, Hawaii 96745  
rdavid@kona.net  
808-329-9141 Phone - 808-329-1245 Fax*



## **George I. Wagner K5KG, New Jersey, USA**

[George can be contacted at [GeorgeK5KG@aol.com](mailto:GeorgeK5KG@aol.com).]

I would like to offer the following regarding the erection of beam antennas and amateur radio stations in environmentally protected areas.

In May on 1998 I was a member of a 15 person crew of amateur radio operators who were granted permission by the government of Mauritius to establish amateur radio communications from the St. Brandon Archipeligo in the Indian Ocean. In granting this permission, both the Mauritius Telecomms Agency and their Outer Islands Development Agency reviewed our very detailed plans describing how the activity would be conducted.

The Telecomms Agency was concerned with legal operation of the radio stations in accordance with Mauritius amateur radio regulations. They granted the radio operating license using the callsign 3B7RF.

The Outer Islands Development Agency, was concerned with our group conducting a legitimate and safe activity in an area that is highly protected in terms of birds, sea life and ecology, in general. The Outer Islands Development Agency likewise reviewed our detailed activity plans, which included the installation of four amateur radio stations and six Yagi antennas [each similar to the proposed antenna] mounted on 10 meter masts [and at a similar height]. This Agency willingly granted us permission to erect the stations and antennas as we had planned.

In carrying out our operation, our crew was extremely attentive to locating equipment (station tents, generators and crew tents) and antennas in areas far away from any nesting sea birds, and there were many birds in every tree and shrub on the island.

I would personally offer that no harm was caused to any bird or sea creature by our crew or its operation. We were quite proud of the "no impact" DXpedition that we successfully carried out. Upon our departure, there was little trace of us having been there. We did, however, come home with many delightful photographs of God's little creatures who had curiously witnessed our stay.

## Paul Granger F6EXV, France

[Mr Granger can be reached at f6exv@wanadoo.fr. Howland is US territory in the Pacific, and is a ]

I just want to share my experience at Howland Island (AH1A) as one of the operators.

Howland Island is a very small island (about 400 m x 800 m), covered with birds. There is hardly any vegetation at all, no tree whatsoever, and just the remains of a tower that I believe was once used as a lighthouse.

We were there for about two weeks, and had about 2 times 4 beams (one CW tent with a monoband for 20, another for 15, another for 10 and another for WARC bands [each of the four antennas roughly similar to the proposed antenna], a SSB tent with same antenna equipment.

We were accompanied to the island by people from the Fish and Wildlife organization, to take advantage of our visit to make some studies on the birds (count, etc).

There was never any objection to erect beam antennas, and the practice showed the birds did not really care about our presence on the island, as long as we would not intentionally frighten them. There was never any problem with them, nor did they suffer any inconvenience that we could notice.

## Appendix C: Other Correspondence Received

Around 100 messages were received in the three weeks after publication of the Committee's decision to disallow erection of the antenna. Extracts of some of the messages are shown below. The other messages can be supplied if required. While some of these messages do not necessarily represent well-considered scientific opinion, they were selected from over 100 messages to give a flavour of the enthusiasm that drives the pursuit of little islands.

There are also some messages that contain opinions regarding the reality of bird strike hazard. Opinions from several professional biologists are included.

Finally, several first-hand accounts of similar antennas on small islands with large bird populations are included.

Explanatory notes are included in square brackets [like this] where deemed necessary.

### **George M. Badger III W3AB, USA (w3ab@qsl.net):**

Unfortunately, there isn't much information about bird strikes on stationary devices. There haven't been enough strikes to create a concern or to provide a statistical record. Antennas pose a problem for their users when birds roost on the elements and or supporting structures and their weight overcomes the structural strength of the element or supporting structure.

Any device that moves at a speed slower than ~10KPH could be thought not to constitute a danger to flying animals. The animals, if they are in normal health, would have no problem avoiding the obstacle. Bird strikes are a real hazard to flying aircraft and there are a number of studies which address those issues.

I would think that the ability to provide consistent communications from and to the area in an emergency could be a compelling argument for a more effective antenna.

I personally would like to be able to carry on a conversation with Deryck about his lay observations of the weather patterns and its effect on the migratory paths of fowl which stop over on the island. Unfortunately, his signal is not consistently strong enough to be able to carry on any meaningful conversation at all.

### **Ted Demopoulos KR1G, USA (ted@null.net):**

I have been listening most mornings (local time) the last 30 days on the frequencies you have been reported on, but so far no luck.

On three occasions, I have found others calling you, however your signal was not remotely strong enough for a contact to take place. Certainly when your new antenna is in place, my chances should increase dramatically!

I have been a ham for over 20 years, and Marion Island is the last active country I need. I've rearranged my work schedule so that I'm working from home in an attempt to make contact!

Good luck and thanks for your efforts. There are literally thousands of us cheering for you,

### **Ken Sobel W3JJ, USA (kenxxx@worldnet.att.net):**

I have awakened early around 6am local time on many days to try to communicate with ZS8D on Marion Island. I have heard him twice but he was too weak for two way communication. And I am using a 5 band 15 element yagi antenna with 3 active elements on each band. I now have 307 countries worked and I really need Marion Island.

I am sure that if Deryck can put up a triband yagi then I would have no trouble in making radio contact with him. It really is important to me!

**Steve Litwin K8WK, USA (litwins@badsector.com):**

I have listened for ZS8D on numerous occasions when I was pretty sure he was there as I could hear the Japanese working him. Essentially my antenna points right at him. Nada! I am in NW Florida near Pensacola and haven't heard him since he's been there. I have 17 countries to go to work 'em all and just a few to go for Honor Roll. I really think Derek's presence there is a real opportunity for me and others like me with a modest station and antenna system to work some real rare DX; but it won't happen, at least for me, if he doesn't improve his signal!

I am 63 and never have heard PE & Marion Is. in all my years of DXing. So it was with some enthusiasm that I read of Derek's activity, and was hoping to get a very badly needed new one from the effort.

**Dr Nelson Moyer KU0A, USA (ku0a@blue.weeg.uiowa.edu):**

I have a TH11 [a bigger antenna than the proposed C3] up at 50 feet [15 m] in a residential neighborhood with lots of birds. The antenna has a 26 foot [8 m] boom and 11 elements from 37 feet [11,3 m] to 14.6 feet [4,5 m] in length. The birds in my neighborhood love to roost on it. You could mine guano from the top of the concrete base! The rotor that turns it is a T2X, and it takes 56 seconds to s l o w l y rotate the antenna through 360°. I run an amplifier at 600 W output. I haven't found a dead bird yet. In fact, I have a hard time keeping them from building nests on the rotor platform. The risk of a tribander to the islands bird population is nil.

I, like thousands of hams, need to work ZS8. In 19 years of amateur operation, I only have confirmed ZS8 phone contacts on 20 meters and 17 meters. I have never worked ZS8 on CW [Morse code], although I'm getting close to the CW Honor Roll. I would like to have that opportunity before I die.

Please plead for reason. As a Ph.D biologist, I can testify authoritatively that tribanders at modest heights pose absolutely no threat to our avian friends.

**Wendell Wyly W5FL, USA (w5fl@flash.net):**

After 45 years in amateur radio, I am still waiting for activity from Marion Island on CW [Morse code]. Unfortunately I have to work for a living and was being transferred when there was some activity from that area.

I have listened daily since the expedition was to arrive, but no signals have been heard in the South Central USA.

**Thomas P. Traugher W0ZX, USA (trtraug@cwix.com):**

I have been a licensed amateur radio operator for over 37 years. Over those many years I have come to learn the tremendous value of being able to communicate with people of different cultures, varying backgrounds and vastly different lifestyles. A major facet of this hobby that fosters this inter-cultural contact is the challenge of conducting radio communications with some of the most remote areas of the globe. I have tried unsuccessfully for my entire involvement in amateur radio to contact a station at Prince Edward Island or Marion Island. I believe it is fair to say that Mr. Yelverton's operation on Marion has truly sparked an international excitement within the amateur radio community. But in order for his operation to be successful, he needs a more efficient antenna system to meet the world-wide demand for contact.

I strongly believe the opportunity to foster international goodwill that the effective operation of this station will surely generate will far outweigh any environmental concerns you may have. I urge you to grant Mr. Yelverton's request to erect an antenna.

**Herb G0WAZ, UK (HerbG0WAZ@aol.com):**

I have been a ham since 1947 I have had beams both large and medium in Denmark, Hongkong, Germany, Florida and now in England. That makes it 52 years. I have a photo of about 120 blackbirds sitting on my TH3 in Florida!. My TH11 (11 elements) is daily being visited by all sorts of birds. However, they seem to prefer the 5 ele 6m beam which is 4 m above the TH11.

I have yet to find a dead bird on the ground, but several have been killed flying into my conservatory's glasspanes.

The only problem I have is the birdshit, especially when the stars eat the ripe elderberries!

**Vernon L. Gibbs W4JTL, USA (w4jtl@kih.net):**

I have been trying for several weeks to make contact with ZS8D on Marion Island, so far I have had no luck hearing him. His signals are just too weak for me to copy here in Kentucky. I would like to work him on CW [Morse code] if at all possible. I need only two [countries] for my DXCC CW Honor Roll.

I have had my three element beam completely covered with Purple Martins and they seem to enjoy the get-togethers. It reminds me of a family reunion. Birds love the antennas.

**Gary Yantis W0TM, USA (gyantis@midtec.com):**

I've had (large and high) rotary beams of various types up for almost 40 years and they have never presented a hazard to birds. I've also been all over the world and seen hundreds of other ham radio rotary beam installations and I know of none that cause birds any problems. In fact, the birds seem to like them to perch on. They probably see them as trees without all those pesky leaves to get in the way hiding a nice perching spot. I've never known a bird to run into a tower or rotary beam. It's like a shiny tree. When did you ever hear of a bird running into a tree?

**Prof Dr Hendrik van Kets ON4IZ, Belgium (hendrik.van.kets@pandora.be):**

I have read that the permission to erect a directional antenna for amateur radio on Marion Island has not yet been granted. If I understood correctly, the reason was that this metallic object might endanger birds. As a biologist I want to state that this is grossly underestimating the navigational capabilities of our winged friends. If we continue logically, then any leafless tree is equally or even more dangerous. In my own experience birds tend to love antennas as a perching place rather than a danger. Moreover this antenna is probably intended to be in place for a limited time.

As an amateur radio operator I certainly understand the wish of the local operator and of amateurs all over the world to have this antenna in place. Marion Island is a rare island to make contact with and amateur radio is a unique means of letting this little known island come into the general attention.

I sincerely hope that the local authorities will revise their opinion and let many people all over the world, make a much wanted contact with Marion Island.

**James Viele W8JV, Ohio, USA (w8jv@yahoo.com):**

I am amongst thousands of amateurs who have been waiting years for someone to activate this very rare island on the amateur bands. One day when I saw packet spots on ZS8 I even stayed home and missed a day's work to attempt to put this one in the log. Unfortunately the signal was very weak and the operator was not on very long. Although I have over 300 countries in the log already Prince Edward is one of the few I still need.

**Madison Jones W5MJ (w5mj@hal-pc.org):**

I live in a birdy area and have been observing them for years. My neighbors and I attract birds with feeders. I also have had an antenna system consisting of a triband beam on a 40' [12 m] tower [in the same league as the proposed antenna, but somewhat higher] in my back yard for years. My feeders are less than 25' [7,6 m] of the base of the tower, and unless the birds all arrive from the northwest and depart to the northwest, they all have to fly in the immediate vicinity of the antenna system. My daily bird flock usually consists of sparrows, doves, bluebirds, cardinals, grackles, buntings, hummingbirds, wrens, jays and similar sized birds, though occasionally something larger comes along. My next door neighbor to the west fancies common pigeons, and feeds a group of 50 or more every day, and has attracted an ivory billed woodpecker to the corner of his second story roof, just next to his bedroom window, much to his dismay. My neighbor across the street to the northwest feeds a group of about 5 huge ravens with a span of at least 4 feet [1,2 m] with bread crumbs every morning. If you want birds, my neighborhood has them in abundance.

I also have two cats. They are very disappointed they have not been able to become intimately acquainted with any birds at all over the years. There have been a few which have fallen out of the nest in the trees, but there have been absolutely none who have been injured or disturbed by the tower or the antenna. I have observed as many as 20 doves perched on the beam at one time, and lesser numbers of other birds from time to time use it as a resting place. From my own experience, I must conclude that the fears of the managers of Prince Edward Island as to the hazard of fixed towers and antennas are without foundation. On the other hand, I have never worked ZS8 on any frequency, and would like to do so. 100 W and a dipole won't let me do it, I fear, since a signal that small will likely fail to reach my Bird Resort.

**J R House K9HUY, USA (k9huy@ewol.com):**

My only answer...is the exemplary record the many DXpeditions that have performed in the past years on the same such islands.

My experience with birds and my three rotary antennas is that they love to perch on the elements and watch for food on the ground that they can partake of. In my estimation this is a great plus for the birds.

**Joe Reisert W1JR, USA (jreisert@jlc.net):**

As for birds, I am a very active "birder" doing daily walks and have a yard full of gadgets to attract and help feed them etc.

Anyhow, I have never seen or had evidence of a bird crash on any of my towers or antennas. They have crashed and been stunned or killed when flying into my large house windows! In fact, the opposite is true. The birds use my towers and antennas to perch and to look for prey. There is seldom an hour that goes by that at least some birds are perched on my antennas. They swoop down to the feeders and fly back up to the antennas. Some birds are quite large like hawks.

To sum it up, the small beam would probably be an asset to the birds.

**Wayne Mills, Wyoming USA (n7ng@arrrl.net):**

[Mr Mills is a professional engineer, involved in maintaining communications systems in the Rocky Mountains. He was also one of the operators at Penguin Island in 1990, and has visited many other such islands: Jarvis, Kingman Reef, Clipperton, Scarborough Reef etc.]

As you know, I live in Jackson Hole, Wyoming. This is one of the more environmentally sensitive areas of the United States, being the home to Grand Teton National Park, and adjacent to Yellowstone National Park, the first such park in the World.

The matter of birds vs. antennas and other wires is one which has received considerable attention. We worked professionally with the US Forest Service in installing a wire dipole at their Jackson Headquarters which is located near a wetland area. Generally, wires are recognized as the primary hazard with regards to antenna/bird collisions. In fact, power lines are also of concern. Here, there are many high power lines which have brightly colored balls (maybe one meter in diameter) attached to them (the wire passes through the center of the ball) in areas where the wires cross long, open areas [Balls of this magnitude are specified by the Federal Aviation Administration, primarily to protect bird-brained human fliers!]. In cases where birds can see the hazards, such as with aluminum type antennas there is not nearly so much concern. In my own case, I have observed the effects of one or two collisions with my 80 meter vertical which apparently occurred at night. I suspect an owl was involved. Very little damage was sustained by the vertical, and none that I know of by the bird.

We have many birds which frequent our property, Lesser Canada Geese, various small and large Hawks, Owls, Great Blue Heron, Sand Hill Cranes, Bald Eagles (not endangered here) and Osprey, not to mention the usual variety of small birds. In fact, one Osprey was quite happy to rest himself twice on my TH6 [somewhat bigger than the proposed antenna] while enroute to his nest while gripping a Cutthroat Trout of better than two pounds. I know of no instances where any bird has ever been harmed by my TH6/40-2CD stack [two antennas, each slightly larger than the proposed antenna, separated vertically by a few m] at 20 meters above the ground. On the contrary, the birds benefit more since it affords a perching location not so common in our immediate area.

Of course you remember our trip to Penguin Island where we exercised considerable care for the nesting birds there. The visiting South African environmental officials seemed to think we were behaving in a proper way.

My suggestion for the ZS8D antenna would be to install brightly colored flags or 15 cm balls around the elements in strategic places. In this case, the aluminum, Yagi-style antenna would be much more friendly to the resident bird population than thin wires.

**Fred Kleber K9VV, Indiana USA (k9vv@indy.net):**

Near El Centro, CA there is a communications tower that had an issue with migratory birds. As I recall the tower height was in the range of 500-700 feet [around 180 m]. Some bird lovers raised the issue of avian migratory paths to local zoning officials. The initial request from zoning was to add orange guy wire markers to the tower. (Similar to those used on electrical feeders in many parts of the country) The tower owner responded by saying that doing this would exceed the wind loading of the tower.

Further research was conducted and it was learned that the birds migrated between certain heights. (Something like 250-350 feet [around 90 m]). A compromise was reached and the orange balls were added on the guy wires between these two heights. It certainly made for interesting sight seeing for those driving along Intrastate 8 near El Centro.

**Robert G. Crane W4AVY, USA (w4avy@juno.com):**

I have been trying to work Marion on CW [Morse code] for some years now. With the tribander not going up seems that I may be waiting hopefully that a reversal on that takes place.

**Guy Olinger K2AV, USA (k2av@qsl.net):**

As referred to in another post I made, the loyal contingent at PVRC [Potomac Valley Radio Club, a club near Washington DC] located a picture of some hundreds of blackbirds perched on his yagis. Check out <http://users.erols.com/n3rr/photos/birds.jpg> [the picture shows a rotatable antenna with a large number of birds perching on top].

Is it birds vs. antennas, or birds at home on antennas?

**Dick Truax K9RT, USA (k9rt@aol.com):**

A Yagi [the type of antenna being contemplated] offers an additional perch for birds to survey their territory. A beam [a generic name for a directional antenna] can **not** be rotated at any speed hazardous to wildlife [His comment refers to motorised antenna rotators. Deryck's antenna will be manually rotated.] I am not familiar with the vegetation/trees on the island, but possibly the Yagi at any elevation might actually offer a benefit to the birds for a perch with a vantage point.

Marion Island is indeed a rare catch for 99% of the world, and for us in North America a really desirable addition to the log. I have heard Derek one time so far on July 18th on 15 meters and his signal was barely audible and unworkable in the States for the most part. A beam antenna would, in my opinion offer a much more substantial signal and at no hazard to the wildlife of the island.

**Charles Wilson GM4UZY, Scotland (cwm.wilson@zetnet.co.uk):**

I am somewhat surprised and disappointed by the report the Deryck ZS8D has not been allowed to erect his Tri-band. Surprised, because I live adjacent to a bird sanctuary here in the NE of Scotland. I have a four element Beam at 18 m [somewhat smaller than the proposed antenna, but at twice the height], and it, and the surrounding bird population have enjoyed a peaceful co-existence for around 18 years, with no ill effects to both parties. Disappointed, because I have waited 15 years to try and make a contact with Marion Island and unfortunately Deryck's signals are so weak that I just cannot hear him and looks like I will never make a contact unless he is allowed to erect an antenna of better proportions than he has at present.

Here's hoping.

**Jim Wise W4PRO, USA (jimwise@juno.com):**

My wife and I have hobbies that complement each other. Her hobby is attracting, watching and feeding wild birds. Mine is amateur radio. We have lived on this tract of land of about 2 acres [just under 1 ha] for over forty years enabling both of us to pursue our respective hobbies to the fullest. I have two guyed towers at 100 foot [30 m] and one at 125 foot [38 m]. The birds frequently perch on the towers and the guy wires and the many antennas I have installed. The antennas are both the wire type and rotary beams. Altogether there are nine beams, the largest have a turning radius of approximately 50 feet [15 m, about three times the proposed antenna's].

At times, the antenna elements are bent over to almost the breaking point from the weight of hundreds of birds that have gathered here prior to migration. Some of these same birds come back here every year to raise their young in the apartment type houses I have built for them.

We also have many song birds that live in small houses near the ground and perch on the guy wires looking for insects under the towers. There are also many feeders and birdbaths.

I believe that birds of all species are attracted by the antennas because they provide a safe place to roost without fear from animals that climb and hide in trees and bushes. Several nearby bird lovers have tried with varying degrees of success to attract wild birds, but none have more birds coming to their houses than we do. I have seen no evidence that the antennas are a hazard to the birds. The only birds we know of being killed or injured by flying into an object are those that accidentally fly into a glass window. We keep the drapes closed on any large windows during the daytime to minimize that.

I have had only one contact with a station on Marion Island. That was a few years ago after being a radio amateur for over a half a century. Having a station in operation from Marion Island with an effective antenna would greatly increase the chances of more frequent radio contacts and would have no deleterious effects on the wildlife population. I sincerely hope that permission will be granted for the installation of a rotary beam at that rare location.



**Brett Graham VR2BG, Hong Kong (vr2bg@harts.org.hk):**

I live within Hong Kong's biggest country park and immediately adjacent to a newly created marine park. My antennas have gotten a thumbs up in a recent Lands Department investigation that was triggered by a neighbor's attempt to lease his roof to a cellular telephone operator. The WWF got wind of it and their complaint was expanded into a review of everything (TV antennas, satellite dishes, etc) in the village.

While it's the other side of the territory which is a hot spot for migratory birds, we still see our fair share out here as we're surrounded by virgin jungle. I know it isn't much to go on, but in my nearly ten years of rural HK antenna farming, birds don't strike antennas-they perch on them. Worse thing is all the crap they leave behind. I suppose [one could argue] that the seeds they excrete whilst on my antennas are lost as they tend not to sprout from a concrete roof, but other than that I can't see anything one could get upset about.

**Joe Pontek K8JP, Indiana USA (v31jp@logical123.net):**

I was over at Mike's, N9NS [Michael C. Goode's correspondence is shown in Appendix B], after attending KJ9D's wake and he mentioned the concern for bird safety around antennas.

I have found in areas from the north and central Midwest USA to the Caribbean that antennas are, to put it simply, aluminum trees. In forty two years as a ham radio operator and commercial radio system manager, I do not recall seeing any [dead] birds around the tower bases.

What I have observed are birds perched at different levels of the tower and guy wires. Also, they perch on the antennas, both wire and aluminum tubing (Yagi design) types. When rotating the Yagis, they take flight sometimes and at other times, they just go for the ride!

I have had some birds take a disliking to me when I've been up on a tower doing maintenance. I suspect they were just protecting "their" territory. There have been many radio expeditions to bird sanctuaries and the only concern that I am aware of was for ground nesting birds and their habitat. The eyesight of birds is much better than ours and I know that the North American turkey can see an eye lash twitch.

I understand the concern, but it is unwarranted. My wife and I both love birds and neither of us would do anything to their detriment. I enjoy seeing the many birds that mount my towers in Belize. I am often distracted from the tower and antenna inspections with my binoculars by the birds I observe. To say no bird has had a collision with an antenna would not be accurate, but I have not observed it, but I have observed birds having mishaps with Gods trees. It was the matter of being by the wrong tree at the right time.

**Denis Jackson MW0CBC, Wales, UK (denis\_jackson@Mitel.com):**

Just wanted to offer my support in respect of your antenna problems.

There must be a huge world-wide demand for you Island on HF and I really do hope you are able to resolve the issues.

On the subject of bird strikes, I've never experienced this problem with beams or anything else that has substantial supports. Wires/dipoles yes but beams are much more visible.

I live within a conservation area here in S.E. Wales and whilst the birds love to sit on my beam and crap all over my 15m mobile lattice tower, I've never known one fly into it-and I've been here nine years. Not even the dozey swallows who regularly fly into the windows of the house!

If you want to really deter them, get a black silhouette of your local birds of prey made up out of thin board and mount it on a pole above the tri-bander-you won't get a bird within 50 yards after that [I have pointed out that thin board does not cut it in the Roaring Forties!].

**Jerry Hudson N5PE, USA (n5pe@juno.com):**

Thank you for giving the hams worldwide the opportunity to work Prince Edward Island. I have been trying to hear you but to date have not had any luck receiving your signal. I understand that you are not permitted to erect a stable beam antenna because of possible harm to the birds on the island. It sounds like someone there has been given bad information.

The birds in my nationhood love my antenna and have suffered no ill effects with the exception of the occasional obscenities shout at them in the attempt to get them off. Which, by the way, is a waste of breath.

I wish you luck in getting permission to put up the beam and I will continue to listen for you.

**Denise Morris M0ADG, Northwest England (denise@m0adg.freerve.co.uk):**

I sincerely hope the authorities will relent and allow Deryck to put up the rotary beams. I am a disabled operator with limited space for antennas so my antenna is only 8 feet [2,4 m]square.

My power is restricted to 100 W, so I depend on people like Deryck in rare locations to have really good antennas. So far I have not been able to even hear Deryck.

I am sure a compromise could be reached and I wish Deryck every success in getting the antennas up and Marion Island on the air and able to compete with mainland Africa.

**Roger Quaintance G0DIZ, England (roger@g0diz.freerve.co.uk):**

I am sorry to hear of Deryck's problem with permission for the beam antenna. I run a wildlife hospital and can honestly say that I have *never* heard of a bird strike to a beam antenna of any height or size, rotating or not.

The Island is such a rare location that it will be better for a station permanently stationed there to cope with the demand than for a stream of DXpeditions to travel out there over a period of years. As we are approaching the sunspot maximum. *now* is the best time to take advantage of conditions. I trust that upon reflection the authorities will realise that their fears are ungrounded.

**John Cooper Jr K0OI, Missouri USA (cooperj@jobe.net):**

I can only write that my beam antenna seems to be a favorite resting place for any and all birds living in or passing through the state of Missouri. However, I can honestly say that I have never found a dead bird at the base of the tower. Apparently, the birds around here pay close attention to their surroundings. I assume that to be true for birds everywhere.

I have never talked to anyone at your location on Ham Radio. There have been many long nights at my location tuning the bands in the hope that I hear you. Unfortunately, even though I have seen many spots for you on the computer, I have not been able to hear your signal yet. The only hope I have for talking with you is if you get permission to install a beam antenna. I will be waiting to hear your signal, and when I do, I will transmit 1500 W into a 6 element beam antenna. Hopefully, between the power and antenna gain on my end, I will have the opportunity to talk to you. It is doubtful that I and many others in the world will have that opportunity as long as you are restricted to using a wire antenna.

**Don Clark KS7C, Washington USA (tclark@televar.com):**

I hope you can get permission to put up a Beam Antenna. The need for me is great I have only 9 more countries to have them all and ZS8 is one of them.

Being in Washington State, USA, I can only hear you on Long Path [i.e. over Australia] and have problems hearing you with just a dipole. With a beam on your end I could probably do it with out a schedule [i.e. a pre-appointed time and frequency]. I have a 4 ele quad [a very large antenna!] and have a Henry amp that runs 1 kW. Hope you can get the beam up it is much needed to be heard.

**Steve Jones N6SJ, California USA (n6sj@earthlink.net):**

Would the people considering the tribander be open to the suggestion that it could actually enhance the birds' environment? It sounds like the ultimate perch to me.

**Kaz Kuboyama JM1FUW, Tokyo Japan (7k4tjq@kt.rim.or.jp):**

We really need ZS8 [Prince Edward Islands]. Most of us have been no chance to work there [*sic*].

**George Diekhoff KC5TJG, USA (diekhoff@wf.net):**

I sure can't offer you any technical arguments, but can say this: Any bird dumb enough to fly into a beam is just as likely to have flown into your dipole (or a tree or a house, etc.) by now.

I have seen you spotted on DX nets on occassion lately, but always on SSB [speech signals]. I'm 100% CW [Morse code] here, and sure hope you'll venture onto the CW segments one of these days. Don't worry if your CW is slow. Just work split [don't listen on your own frequency], answer the guys who are calling you at a comfortable speed, and you'll be amazed at how easy it is.

Good luck with your antenna; it would sure make a world of difference in getting your signal out from a very rare location.

**Dennis Battrum VE5KX/W0, USA (dbattrum@worldnet.att.net):**

Far from being a bird strike hazard, the yagi antenna provides a convenient perch for birds. I have increased the swallow population on my property from one to four pairs since putting up my Force 12 [the same manufacturer as the proposed antenna]. Any bird-lover should welcome the addition of a Yagi antenna.

**Jim Jordan K4QPL, USA (k4qpl@bellsouth.net):**

I'm attaching the item from QST. In case the print isn't clear, the text reads:

"Antennas sold to Florida hams should be wind and "bird" rated. Jim, K4JUQ, in Punta Gorda captured this flock of ibises resting on his tribander. Both the antenna and the birds survived the encounter intact."

Hope this will be of some help with your antenna problems. I have personally never seen a bird injure itself flying into a tree branch the size of a beam element. And during the years I spent in South Africa, the birds seemed of normal intelligence!

**Bob Russell W4DZZ, Alabama USA (w4dzz@scott.net):**

Personally, I would like to express my support and the support of the local DX club in the Birmingham, Alabama area. I have been chasing DX for about 40 years and have yet to work the Prince Edward islands on CW [Morse code]. It would be a great privilege to do so. We would sincerely appreciate the Management committee reconsidering their refusal and permitting Deryck to erect the beam. To my knowledge, no bird has ever been injured due to antennas on my property.

**Ed Swiderski WA2WSX, USA (ecswiderski@worldnet.att.net):**

Here in the states, bird encounters with beams generally take the form of the birds using the antennas as a perch, or a place to rest. The only adverse effect being the resulting droppings that are left behind. Perhaps the committee could allow Deryck could erect the beam with the understanding that if it really does pose a problem with the birds, he then must go back to using his present setup. (I can't imagine there being a problem with bird strikes, but I'm not familiar with that particular species of bird. It just seems that if they are that stupid, they would have become extinct ages ago!).

The worldwide DXers' need for Marion Is. is certainly there, and it would be quite difficult for Deryck to satisfy this need without the beam. I have been after Marion Island on CW [Morse code] for close to 20 years. It is one of the few that I need on that mode. Deryck seems to prefer using SSB [speech], but supposedly has the capability for CW [Morse code].

In any case, I hope he can get permission to put up the beam because the worldwide need is very great.

**Bob Williams K6EMN, USA (k6emn@arrl.net):**

My argument with that theory would be my city, San Carlos, California, by declaration of the City Council, has been a bird sanctuary for many years, making it against the law to endanger any bird life. There has never been a problem endangering birds with my three element antenna [somewhat smaller than the proposed antenna]. In fact the birds seem to enjoy it and often roost on it for long periods of time. San Carlos has many of these antennas plus television antennas and power lines and power poles.

By the way Chris, I have been an amateur radio operator for 45 years and have never worked Marion Island.

**John Warren NT5C, Texas USA (nt5c@texas.net):**

We live in Central Texas, which is a region without large trees growing naturally. My wife is a gardener, and over the past 17 years we have built up a 2-hectare homestead which, because of the greenery we have introduced, has become almost a bird sanctuary. Birds of many species, everywhere!

On this 2 hectares, I have had two beams up at 20M and 27M for 11 and 12 years respectively. Far from being a hazard to birds, the beams *attract* them! I look out of my shack window each morning, and the birds are lined up on the elements, surveying potential food in the area no doubt. Frankly, I'd like to dislodge them, at least in the numbers they sometimes congregate, but they are quite literally unmoved when the beams are rotated. The one thing that *does* move them is a large hawk, who has a favorite spot where the reflector attaches to the boom on my 2-element 40M beam.

In 17 years mowing the property, I do not recall seeing any evidence of a bird injured or killed under the beams. They thrive on these artificial perches!

**Victor Pisanov UA9OS, Siberia, Russia (vic@scnov.ru):**

I wish you success in your attempts to install a decent antenna which could enable you to be heard all over the world. Many amateurs in Novosibirsk, Siberia dream of a contact with you.

**Takashi Matsuzawa JR1EFG, Tokyo Japan (matsuzawa@jp.ibm.com):**

With my 100 W out, I've never contacted Marion Island but under current solar cycle, I may be able to work him provided he can be on the air with the beam. Please inform the official of the island that lots of people around the world are looking forward to contact with Marion Island.

I think one compromise is that he erects the antenna and if it creates a significant bird problem then he can bring it down until some solution can be made. How about that?

**James Archer 5Z4FV, an American citizen working in Nairobi, Kenya (James\_Archer@erm.com):**

I am an environmental engineer with over 15 years of professional experience, including work in small environmentally sensitive environments.

There is absolutely NO reason why this should not be allowed. The benefits far outweigh the negatives, from both an environmental and emergency communications perspective.

**Ed Mitchell KF7VY, USA (vbook@vbook.com):**

A couple of years ago, Home Power magazine (focuses on small scale generation of renewable energy including wind, solar, hydro, and other alternative energy production systems) ran a story about the "bird problem".

In that field, the concern was that wind power electrical farms, with tall towers and whirling blades, would be grinding up birds, *en masse*. At least that is the perception that much of the public has about wind energy farms.

Except for an unusual number of raptors found dead in California's Altamont Pass wind farm, such situations did not occur. And in the case of Altamont Pass there are hypotheses that the bird kills might be related to other factors, including pesticide use in the area. Of specific interest to hams who wish to build tall towers, the article cited the estimated number of birds killed by collisions with power poles, power lines, automobile wind shields, and large glass windows and buildings. Unfortunately, I don't have the specific numbers with me but my recollection was that over 100 million birds were estimated to be killed annually, particularly by cars and building windows. The important consideration for Amateurs is that towers are no more likely to cause bird deaths than power poles and power lines, which cross far, far, far more sky real estate than amateur antennas ever will. The bottom line is that Amateur antennas are not lethal to birds.

And judging by the extensive roosting that has occurred on my Yagi and wire dipoles over the years, the antennas may even be beneficial.

Per my signature, below, I'm currently traveling and can't get access to any research materials. Home Power sells CDs containing the complete text and photos of their publication for about \$30. If someone wishes to research this further, information on purchasing the CD is available at their web site at <http://www.homepower.com>.

**Dennis Ratcliffe VE3DDR, Ontario, Canada (ve3ddr@csolve.net):**

Heard you and called you long path the other morning but you were real weak. Hope you can get the beam up soon. It does not have to be very high, but it will make your signal much, much better. I look forward to working you; ZS8 [PEI] very rare!

**Laszlo Weisz HA3NU, Hungary (HA3NU@npp.hu):**

I read your message about problem with birds on Marion island. My neighbour breeds pigeons for competitions. He has about 50 valuable pigeons. When I moved near his house and erected my antennas he almost collapsed. I erected two towers (15 and 18 m high) and on one of them is a 3 element beam and on the other are inverted vee dipoles [wire antennas] for 160, 80 and 40 m [three amateur bands] and I have two wire loops for 30 and 40 [another two bands]. This all is only on about a 800 m<sup>2</sup> site (It looks like a web). My neighbour asked me to *tie ribbons* on wires so that the pigeons can avoid [them]. It works! The pigeons avoid my wire antennas. The beams [similar to the proposed antenna] **do not need** any action, the elements are thick enough for birds to recognize them in time.

**Fred Laun K3ZO, Washington DC, USA (aalaun@ibm.net):**

[Mr Laun is a career diplomat with the US State Department, and has spent considerable time abroad in Asia and elsewhere]

I am always quite surprised when I see that environmentalists consider radio towers to be hazardous to birds. On my approximately one-acre [30 000 m<sup>2</sup>] lot I have three towers: one is 24 metres of Rohn AB-105 [heavy duty tower]; the second is 28 metres of Rohn AB-105 [similar]; and the third is 42 metres of Rohn 80 [very heavy duty, including some very large antennas].

Far from providing a hazard to the birds, my three towers are used by the birds as perches. Particularly during migration season in the Spring and Fall, hundreds of blackbirds tarry on my towers and antennas for a while to rest up before continuing their flights north or south. They are so numerous at times that I occasionally fear that they will leave antenna elements permanently bent.

The birds in fact provide a health hazard for the fellows who work on my antennas. Trips to the tops of the towers are occasionally accompanied by an almost unbearable stench from bird droppings. This certainly shows that the towers are heavily used-and much appreciated-by the bird population around here. Indeed, my wife has frequently commented that it seems we have more birds in our garden than do the neighbors, and I think the towers have something to do with it.

So from my experience I would say that towers on a remote island, far from posing a health hazard, would be welcomed by the birds as one more perch they can use without having to come down to ground level, thereby possibly exposing themselves to predators during an unguarded moment or during sleep.

**George P. Nowak VE1ACU, New Brunswick, Canada (gnowak@nbnet.nb.ca):**

I was happy when I heard that Marion Island will be active again. I watched the Internet, nothing. Then I studied the DX-Cluster from Finland, sometimes for the last 24 hours. I found him reported, and then next day I listened on the reported frequency and time. Nothing heard, so I checked the DX-Cluster for the last 24 hours. This time I found nothing. I gave up. Hearing about the antenna restriction, I think if he used a better antenna I would have a better chance to work him as an all time "new one".

**Ted Brattstrom NH6YK, University of Hawaii, USA (ted@hawaii.edu):**

I am both a ham and a bird aficionado (penguins are my favorites). However, I've operated on Midway Atoll (KH4) [the amateur radio prefix assigned to the island] a large albatross colony and done a bit of reading about the history of antennas and birdstrikes on the island.

There used to be a large number of Vertical antennas with guy wires as well as large wire antennas (Rhombics, [similar to the ones previously used on Marion, although possibly not as large] "Birdcage" discones, etc).

In the research done, the key problem determined was the the guy wires were too small to be seen by a fast flying seabird (albatross with 2 meter wingspan) who was expecting there to be nothing on the island. The recommendation was the addition of streamers at intervals along the wires.

In typical US Navy fashion, they did not implement the suggestion, saying the windload would be excessive. (How they figured the windload of some plastic streamers - and compared it to a 4 kg bird at 60 kph impacting the wires... I have yet to figure).

When I put up a 5 el [element] 6M beam [somewhat smaller than the proposed antenna] at 10 feet [3 m] in a medium use bird area-I added streamers, and had no bird strikes.

The specifics of Marion Island are likely to be different, but monitoring of bird flightways and the addition and maintenance of streamers should alleviate the problem. (and if the dipole hasn't caused a problem....) [the dipole is the existing short wave antenna].

I'd love to contact Marion Island, as well as talk about penguins :-)) and I hope the information proves somewhat relevant. If you need the reference, I can probably dig it out in a few hours of ravaging my notes.

**Gerald A. Gorrell W8WFN, Michigan, USA (at784@tcnet.org):**

I'm the Emergency Coordinator for Leelanau County Michigan. My county is a peninsula that extends out into Lake Michigan in the flight path of numerous migratory birds. These birds fly both day and night. To update the county's communication system a 140 meter tower needed to be erected with thousands of meters of guide wires. Of course this brought about bird collision concerns by well meaning people. This area of the State is sensitive to environmental issues. Unfortunately their input came from sources outside this area and was not pertinent to this local situation.

To make story short, after four years of the antenna being in place, there have not reported bird deaths or injuries. Quite the opposite. The smaller birds use the tower and guide wires as a resting place doing foggy weather.

Some thoughts:

- ?? Amateur radio is communications world wide. When other communications systems fail there is amateur radio.
- ?? By sheer virtue of length, the 10 meter horizontal square foot print of the beam type antenna is extremely small compared the thousands of meters for the wire rhombic antennae, would reduce the collision potential to nill.
- ?? I have a 20 meter high tower with a beam type antenna (10 meter square foot print) in place for three years. My location is between Lake Michigan, Glen Lake and the grain crop fields where the migratory birds fly on their way through. Very often the geese and ducks rest in the area and fly by twice a day. And the ever present sea gulls and cormorants make their daily flights to and from a land that is located about 15 km in land. I've yet to find a dead or injured bird.

The last item is my request for a qsl card [a postcard to prove that the contact really took place] from Deryck. I sent it to you in June and will need it for DXCC Honor application mid September [i.e. he needs less than 10 countries out of 332, and Deryck was his first contact from there].

**Cesar Aguirre Mesinas OA4QV, Lima, Peru (cesaroa4qv@hotmail.com):**

I inform you that the Peruvian DX Association has much interest to contact with Marion Is., and with the dipole antenna we don't hear the station in this part of South America. We have a South America DX Net (stations of Chile, Ecuador, Colombia Paraguay, Peruvians, etc.) that has interest in the contact with Marion Is.

**Mark Musick WB9CIF, Indiana, USA (mmusick@iquest.net):**

I live in Plainfield, Indiana approximately 10 miles [10 km] southwest of Indianapolis, Indiana. I work for a local electric utility and being in the kind of business we are in, we are constantly faced with environmental issues.

I have talked to the people in our environmental department that monitor the bird populations at our generating stations. They have given me some web sites to check out that may have some reports to support a further

review of your antenna/tower request. They are sites for the US Fish & Wildlife Service and are as follows:

[www.fws.gov/search/index.html](http://www.fws.gov/search/index.html)

[www.fws.gov/r9mbmo/issues/tower.html](http://www.fws.gov/r9mbmo/issues/tower.html)

They have told me that the problems with migratory birds running into guy wires and towers is usually only a problem for tall structures, say in excess of a couple hundred feet [over 60 m]. The shortest height that they could recall hearing about was a communications tower that was approximately 600 feet [182 m].

Therefore, if the tower you are considering is less than 100 feet [31 m] (I told them your tower may be 60 or 70 feet [18 to 21 m] high. Not knowing what you had in mind I figured this was probably the maximum height you would attempt to install) there should be no problem. I also described the approximate dimensions of a triband Yagi (they chuckled at the small size of the antenna compared to hundreds of feet of guy wire on tall towers and there still being a concern) and they could not see why you were not granted a variance on the restrictions. Basically an antenna that small and that low should not cause a problem to migratory birds. They have never heard of a case of birds flying that low and colliding with towers or guy wires.

[Irrelevant paragraphs removed]

Hopefully, I can find something for you. I need ZS8 on CW. I have 5 entities worked and confirmed on SSB that I do not have on CW. Current CW totals are 325 worked 324 confirmed. I need three more to make the CW Honor Roll. I have seen spots for you between 1200-1330 UTC on 17 meter SSB. I haven't seen any CW spots as of yet. I hope we can make a QSO regardless of the outcome of my search.

#### **In a subsequent message:**

One other thing I forgot to mention in my previous note is that the boys in Environmental say there appears to be some substance to the idea that the birds are attracted to the tower by the beacon lights. Of course this would not be the case in this situation.

I was told today that we are having problems with ducks now hitting the static wires on our transmission lines in one particular area. The static wire is the small wire at the top of the transmission line towers. It is basically a neutral that is put there to protect the high voltage transmission line from lightning and static discharge. I didn't know if you knew that so I thought I would explain it.

These towers are 60 to 70 feet [18 to 21 m] high. This concerned me until it was further explained that on one side of the transmission line right of way is the nesting area for the ducks. So it sounds reasonable that there may be a problem. Also on the opposite side of the transmission right of way is a hunting club. Go figure!

#### **Michael DH3MIT, Germany (message01@t-online.de):**

I am a Radio Amateur from Germany. My Hobby is to talk with people in whole World and to collect QSL Cards.(Radio Cards to confirm the contact). There are 333 different Countries to work now. To make this possible I have a 3 Element 3 Band Beam about 10m over ground. This is the minimum to make it true to talk to the Pacific, Asia, South America or Africa. But also the Stations in these countries need this minimum. If they don't have it, they will have not much success.

At the end of October I will go to Maldives Island in Indian Ocean with my radio. Also I take beam antennas there. Is the best way to be on the radio. I hope to have contact some day with Prince Edward Island to have the card in my collection.



**“Mac” McCandless N8MC, USA (bmccandless@postoffice.worldnet.att.net):**

I am badly in need of a CW QSO [Morse code contact] with Marion Island. I feel that a triband beam [directional antenna] is necessary to provide the signal needed to communicate with the thousands of hams who need a QSO [contact] with the rare DX entity, Marion Island.

I myself have used a small triband beam for many years, and have never had any problems with birds colliding with it. Also, I feel that much goodwill would be generated for South Africa if the ability to more easily communicate with Marion Island becomes a reality.

**Chet Osiecki W1KNT (w1knt@prodigy.net):**



Chris please tell those people that there is a near-octogenarian in the middle of New York City, sick with terminal cancer and has Marion Island on his “Wish” list. Time is short. Here is a picture of my antenna on the fire escape some 20 feet [6 m]above ground. Hope they will be kind and give their permission.