

Envirotalk



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PROMOTING APPRECIATION, ENHANCEMENT AND CONSERVATION OF BERMUDA'S ENVIRONMENT

WELCOME

In this issue...

- **Samia Sarkis**, Protected Species Coordinator, reports on the Department of Conservation Services efforts to reverse the declining number of endemic and native species through the Species Recovery Plan.
- **Jonathan Nisbett**, Veterinary Officer, and **Herb Marshall**, Animal Warden, review dog legislation. They outline the laws on dog licenses, breeder's permits, multiple dog permits and citations. They also share a few pointers on how to avoid having complaints made against your beloved dogs.
- We introduce our new Environmental Engineer, **Dr. Geoffrey Smith**.
- We have two mouth watering recipes for you to try using locally grown cucumbers.
- As usual we have our Summer planting calendar.

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SPECIES RECOVERY PLAN

“To conserve and restore Bermuda’s natural heritage” is the mandate of the Department of Conservation Services. In line with this objective, and in response to an alarming proliferation of invasive species both on land (e.g., Mexican peppers) and in the surrounding waters (lionfish), and a continuous need for increased development to accommodate the resident human population, a thorough evaluation of the status of the endemic and native species of Bermuda – both terrestrial and marine – is needed.

Native flora and fauna

Bermuda’s native flora and fauna originates from south-eastern North America and the Caribbean, supplied by wind-borne dispersal and via the Gulf Stream. Yet despite this isolation, and small size, over 8,000 species have been recorded from the island and its surrounding waters. Due in great part to human colonization and development resulting in one of the world’s most densely populated islands (1,500 people per square kilometre); major threats to the native flora and fauna have been identified as habitat loss or deterioration, and competition with invasive species. This has resulted in the known extinction of 25 endemic species, the decimation of an estimated 200 native species and naturalization of at least 1,200 exotic terrestrial species. Even more frightening is the fact that Bermuda’s undeveloped land area is now dominated by 22 plant species considered invasive, outcompeting and overshadowing the native flora. Population numbers are continuing to decline for several species, and without active intervention, further extinction may occur. A most critical example of this is the case of the endemic Governor Laffan’s fern (*Diplazium laffanianum*); only one mature specimen of this fern species remains in Bermuda, maintained in a nursery environment by the Department of Parks. Although not as dire a case, the yellow wood tree, prized for its timber value by early settlers and exported to England for cabinet wood, also suffered a dramatic decline leading to a present day total population of 23 mature trees. Belonging to the citrus family, the yellow wood tree is an asset to one’s backyard, recorded to have a pleasant aroma when in bloom.

Legislation

The Department of Conservation Services has addressed the declining number of endemic and native species by identifying the actions required for recovery of the species. Species were prioritized, based on the health and size of their populations, and those considered most threatened were listed as “Critically Endangered”, “Endangered” and “Vulnerable” under the Protected Species Act 2003. This newer legislation mandates active intervention, rather than adopting a passive protection approach. Because action requires resources, personnel and infrastructure, only those species

deemed most in need of immediate recovery were listed. Once a species has attained recovery criteria and demonstrates a healthy and abundant self-reproducing population, it can be down listed to a less threatened status or even removed from the list. Listing a species is a rigorous process, based on international criteria set out by the International Union for the Conservation of Nature (IUCN), and based on such factors as population size, area of occupancy, habitat availability, among others.

The need for active intervention is apparent, as some of the species proposed



Old queen conch in Bermuda. Photo courtesy of S. Manuel.

for listing have been passively protected for several decades without any sign of recovery. This proves true for the Queen conch (not to be confused with the smaller, whitish and much more abundant harbour conch found in many of Bermuda's inshore waters); despite a complete ban from fishing and/or taking of queen conch since 1978, queen conch populations in Bermuda remain scattered, composed of 'old' individuals –

most of these are thought to be over 30 years old, as witnessed by the growth of corals on their shells (see below) and showing little sign of population growth. The additional concern regarding this marine species is that Bermuda's queen conch may well be genetically distinct from its southerly Caribbean neighbours; implying the irreversible loss of this gene pool should the Bermuda population disappear.

International Collaboration

This concern for genetic preservation is also true for many of the plant species. For this reason, a programme was initiated in 2007 to ensure that Bermuda's most threatened endemic plants are preserved; seeds are sent to the Millennium Seed Bank in London, U.K. for this purpose. This not only is an assurance of species preservation, but also guarantees the availability of plants for restoration of these species, should populations on Bermuda be wiped out due to natural disasters. To date, more than 10,000 seeds of Bermuda cedar, Bermuda palmetto, olivewood, snowberry, St. Andrew's cross, and yellow wood tree have been sent to the Millennium Seed Bank. This project is ongoing and has been carried out to date, by a group of keen field botanists volunteering their free time to collect and clean seed (sea overleaf).



Cleaning 3,700 olivewood seeds.
Photo courtesy of S. Sarkis.



Prothalli cultures of Governor Laffan's fern grown at the Department of Parks. Photo courtesy of S. Northcott.

International collaboration is critical to successful recovery in the case of certain species, where scientific data is not available and expertise lacking. In the case of Governor Laffan's fern, an ongoing exchange between Bermuda and the Omaha Zoo exists; spores are sent to the Omaha Zoo for germination, and prothalli cultures (or seedlings) are returned to the Department of Parks in Bermuda. These are grown under controlled conditions in order to build a stock of reproductively mature individuals (see photo below). Investigations are required to optimize conditions for the growth of prothalli to mature plants, and several trials will be necessary before developing a successful protocol. In the long term, the goal is to transfer plants to the natural environment and in this way re-establish the natural populations. Some species which could also greatly benefit from overseas expertise are the rock lizard or Bermuda skink (*Eumeces longirostris*), the endemic land snail (*Poecilozonites circumfirmatus*), the Longsnout seahorse (*Hippocampus reidi*), among others.

Recovery

Actions such as the Millennium Seed Bank initiative are stemming from the recovery plans developed by the Department of Conservation Services for all species listed under the Protected Species Act 2003. Although in some cases recovery has been initiated for some species – for example, the well publicized Bermuda Cahow project – the plans provide a framework engaging experts and the community in working towards a common goal – the self-sustainability of all native and endemic species of Bermuda. To date, all those interested, keen field botanists, marine enthusiasts, government departments and NGOs, have worked individually for a better environment. Recovery plans provide the opportunity to pool resources; focus efforts on prioritized actions and in this way achieve a common objective – the conservation and restoration of Bermuda's natural environment.

All recovery plans published can be found on the Department of Conservation Services website (www.conservation.bm).

If you would like to find out how your actions can contribute to the recovery of species, please contact Samia Sarkis at the Department of Conservation Services (scsarkis@gov.bm). For a complete list of species currently protected under the Protected Species Act 2003, please go to www.conservation.bm.

Please note that species listed under the Protected Species Act 2003 are under strict regulations and a permit from the Department of Conservation Services is required for anyone wishing to work on these species.

Samia Sarkis

Protected Species Coordinator

DOG LAW: IGNORANCE ISN'T BLISS, IT'S COSTLY

Dog Licence

Dogs in Bermuda must be licensed annually. Licensing of our pet canines dates back at least to the 1970s when packs of free-roaming dogs frequently attacked other animals. Although Bermuda has made great strides since then, it remains important that we control our dogs because of the close proximity we live to one another. Persons keeping a dog require a licence. It is an offence against the Dogs Act 1978 (and the soon-to-be-implemented Dogs Act 2008) to keep an unlicensed dog. In the recent months, court cases have resulted in fines of up to \$2,500 for unlicensed dogs. Recent fines make it very worthwhile to keep up with your pet's licence. Additionally, the new Dogs Act 2008 will empower the Government to collect retrospective unpaid licence fees for up to three years.

The most efficient method to license your dog is by paying the annual licence fee at the offices of the Department of Environmental Protection in the Botanical Gardens. At our office, we are able to immediately affect changes to your address or contact information. (Besides that, you can enjoy a lovely, healthy stroll through the Gardens.) Alternatively, you may go to any post office to renew an existing licence; however, there will be a delay in having the licence information updated in our system. We are currently working on implementing an online renewal process to make the whole system more convenient for dog owners.



Breeder's Permit

Another very important matter that comes to the attention of the Animal Control Section is the issue of dog breeding. By law, to produce a legal litter in Bermuda, you must obtain a Breeder's Permit **before** your bitch is bred. This represents a significant change in procedure from the past, and helps hold accountable those persons who breed without a licence...and sometimes apply for a licence after the fact.

There are four easy steps to ensure compliance with the law; however responsible breeders take far more efforts to ensure the well-being of their litters:

Step 1: Apply for a breeder's permit at least one month before you intend to breed your bitch. An Animal Warden will contact you to arrange an inspection of the property where the litter will be whelped and raised.

Following the inspection, you will be notified of the outcome of your application. Premises which are deficient must be remedied before permission can be granted. Once permission has been granted and fee paid, the dog may be mated and you are on your way to producing a legal litter.

Step 2: When the puppies are about four weeks of age, contact the Department to arrange to have the litter microchipped. Currently, there is no additional charge for this service as it is included in the breeder's permit fee.

Step 3: License each puppy. It is the responsibility of the breeder to do so, and by law, the puppies must be licensed by four weeks of age. This usually coincides with the microchipping. Each puppy must be licensed and microchipped **prior** to going to its new owner, and the breeder shall pass the licence and microchip information to the new owner.

Step 4: Along with your breeder's permit you will receive a Puppy Distribution Form. This form must be completed and returned to the Department. This



process is an extremely important – but often neglected–part of a breeder's responsibilities. It ensures an accurate account of the puppies and their new whereabouts. It also alleviates the breeder of any further legal responsibility pertaining to the puppy. If puppies are not put in the names of their new owners, the breeders will be legally responsible for those licences and any legal action regarding unlicensed dogs.

Follow these steps to produce a legal litter of puppies and everyone involved will be happy... especially you!

Multiple Dog Permits

Dogs are counted per property, not per household or assessment number. Whether the property contains a single dwelling or multiple dwellings, the grand total of dogs on the property must not exceed two, without a multiple dog permit.

To keep three or more dogs on a property (even if the dogs are owned by multiple people), a multiple dog permit must be obtained from the Department. Upon application, the property will be inspected, as well as the Department's records to learn of any previous complaints or issues. If the permit is granted, it will be specific to the premise and to each dog on it, identified by licence number and microchip. The permit will be valid for a period of five years, and any changes in the number or identity of dogs on the property must be reported to the Department, as no dog other than those listed is legally permitted.

Citations

Of all the new aspects of the Dogs Act 2008, the new ticketing system brings most elation. Goodbye to lengthy case files and pre-court procedures; Hello to efficiency!

Simple violations of the Dogs Act 2008 may be taken care of by simply issuing a citation or ticket. Similar to a parking ticket, the citation offers the accused the option of an out-of-court plea and an established fine to settle the matter. Less time, less hassle, more efficient enforcement of the law.

But chronic offenders beware. The ticketing system is not a requirement, but an option. Chronic offenders can expect an appearance before a magistrate...for a more substantial 'bite' into your wallet.

Being un-neighbourly

No-brainer #1: Don't like cleaning dog poop? Let the dog wander onto the neighbour's lawn. No-brainer #2: Your barking dog keeping you up all night? Tie the dog on your boundary far from your house, but next to the neighbour's bedroom window! These are two typical disastrous scenarios that occur, and will cost you plenty!

Browse through the complaints we receive on a quarterly basis, and one thing becomes obvious. Many of the complaints are avoidable, and arise out of keepers being thoughtless, uncaring and un-neighbourly. We see neighbourhood relations deteriorate, often because someone chooses to

be bullheaded or wants to get back at the other party over something minor or unrelated. Angry, warring parties often fail to see the folly of their ways. Besides the offences that arise, there is a considerable cost to neighbourly relations. Who wants to live next a person with whom they do not get along? People spend enormous amounts of energy carrying a grudge for weeks, months, even years, only ensuring that, in the end, no one wins. It's enough to make you believe that common sense isn't so common anymore. Think neighbourly!

Officers of the Department of Environmental Protection are pleased to serve you, and ensure the well-being of all animals. Please feel free to call 239-2327 with any question you may have pertaining to these or any other animal related topic. More topics will be addressed in future issues.

Herb Marshall, Animal Warden
Jonathan Nisbett, DVM
Veterinary Officer
Animal Control Section

Q&A WITH DR. GEOFFREY SMITH, ENVIRONMENTAL ENGINEER

The Department of Environmental Protection would like to welcome our new Environmental Engineer, Dr. Geoffrey Smith. Dr. Smith joined the Department in May of this year. We had a chance to ask Dr. Smith a few questions about himself and his career to date.



Welcome, Dr. Smith, can you tell us what your responsibilities are as Environmental Engineer?

This is a newly re-established position and comes under the direction of the Director of Environmental Protection, Dr. Fred Ming. My role will include developing and administering environmental policy and legislation to ensure that we have sustainable use of Bermuda's natural resources. This will include understanding the current and future impacts to the island's environment including the air we breathe, the fresh water lens beneath us

and seawater around us. The information will then be used to develop and implement policy to address and limit potential impacts.

How did you become an Environmental Engineer?

My BSc was in Chemistry as a joint honours degree with Chemical

Oceanography from the University College of Wales, Bangor. My PhD research assessed marine sediment chemistry associated with oil drilling rigs and was based at the School of Ocean Sciences, Menai Bridge, North Wales. I then worked for the European Commission as part of a scientific team that assessed the impact, recovery, and a range of clean up operations of the beaches in Saudi Arabia following the oil spill from the Gulf War from 1991 to 1994. Next followed a contract with an Environmental Consultancy in the UK addressing soil remediation at a contaminated Brownfield site. I was employed by the Defence Research Agency, which changed to QinetiQ from 2001, as Technical Manager of a scientific and engineering department for 15 years. During this time I was an advisor to the Ministry of Defence at NATO on marine environmental protection and addressed treatment technologies of air, water and various solid and liquid wastes to meet stringent legislative requirements, and to directly address the needs of end users such as the military (Royal Navy and Army) and commercial clients.

Are there any external factors that have changed your role as an Environmental Engineer in recent years?

The concern over the concentration and toxicity of air and water-borne contaminants that are generated from a range of processes, from waste management to power generation, has led to the generation of increasingly stringent environmental discharge legislation. Increased government taxes for landfilling wastes coupled with incentives such as Renewable Obligation Certificates (ROCs) in the UK are also starting to provide the financial impetus to realise the energy that can be derived from a range of wastes such as municipal solid waste and organic wastes after the recyclable wastes have been removed. This legislation, and its down-stream implications, has directly influenced the types of engineering projects that are now becoming financially viable.

What do you enjoy most about your career?

The interesting and varied nature of the work ensures that every day can provide new challenges or new areas that require researching and understanding. Whenever you consider an environmental impact you can never underestimate the interrelationships across many areas of science.

What do you like to do in your free time? Any exciting hobbies?

I enjoy rowing, though not in a competitive sense these days, road cycling and kite surfing. And my latest interest is playing with my son Jake, who is three, and watching him develop with my wife Fiona who is from Bermuda. I think Bermuda is an excellent place to be brought up with the countless opportunities on your doorstep for sailing, other water activities and its good sports ethic.

IN THE KITCHEN



Delicious locally-grown cucumber recipes

We grow cucumbers throughout the year in Bermuda but they are most plentiful from late spring until early summer.

Cucumbers are a great source of calcium and potassium, and they have some Vitamin C and Vitamin A content. Low in calories, cucumbers are a great addition to any diet.

Try these deliciously refreshing summer recipes.

Cold cucumber and beet soup

- 2 medium cucumbers
- 1 pound cooked beets, fresh or canned
- 1 small onion, halved
- 1 tablespoon chopped parsley
- 6 cups chicken broth
- Salt and pepper to taste
- 6 tablespoons sour cream
- 3 sprigs dill, chopped

Peel the cucumbers, cut lengthwise and remove the seeds with a spoon. Cut into small pieces. Drain the beets and cut in half then shred or grate. Shred or grate the onion. Put cucumber, beets and onion in a bowl. Add the chopped parsley.

In a saucepan, heat the chicken broth. When it is hot, pour it over the cucumber, beets and onion and mix well. Add salt and pepper to taste. Chill the soup for 2 hours. Serve and top each serving with 1 tablespoon of sour cream and sprinkle with chopped dill. Makes about 8-10 cups.

Gazpacho

- 4 tomatoes, peeled and chopped
- $\frac{1}{3}$ green bell pepper
- $\frac{1}{3}$ cucumber, peeled
- $\frac{1}{4}$ onion, chopped
- 2 garlic cloves
- 3 tablespoons red wine vinegar
- 2 tablespoons olive oil
- 1 tablespoon salt, or to taste
- 3 cups French bread cubes, crusts removed, soaked in water

For the garnish: minced onion, minced green bell pepper, minced cucumber and small bread cubes.

In a blender or food processor, puree the tomatoes, green pepper, cucumber, onion and garlic. Blend in the vinegar, oil and salt, and blend in the bread cubes in batches. Transfer the mixture to a bowl, thin to the desired consistency with iced water and chill, covered, until it is cold or overnight. Stir the gazpacho, ladle into chilled bowls and serve it with the garnishes. Makes about 6 cups.

PLANTING CALENDAR – WHAT TO PLANT IN SUMMER...



VEGETABLES

June

Beans, Cucumber, Squash, Tomato

July

Beans, Carrots, Tomato

August

Beans, Broccoli, Brussel sprouts, Cabbage, Carrots, Kale, Leeks, Mustard Greens, Pepper, Radish, Rutabaga, Tomato

FLOWERS

June

Amaranthus, balsam, calendula, celosia, coreopsis, cosmos, gaillardia, gazania, globe amaranth, hollyhock, marigold, portulaca, rudbeckia, vinca and zinnia.

July

Celosia, cosmos, gazania, globe amaranth, impatiens, marigold, salvia, snow-on-the-mountain, vinca and zinnia.

August

Celosia, cosmos, gazania, globe amaranth, impatiens, marigold, salvia, snow-on-the-mountain, vinca and zinnia

ON HER MAJESTY'S SERVICE



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