Far North Coast Bromeliad Study Group N.S.W.

Study Group meets the third Thursday of each month

Next meeting September 21st 2017 at 11 a.m.

Venue: PineGrove Bromeliad Nursery

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Discussion: August 2017

General Discussion

Editorial Team:
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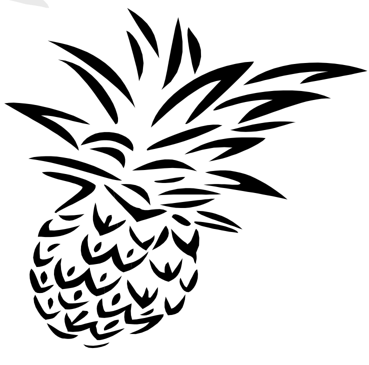


Meeting 18th May 2017

The meeting was opened at approximately 11.00 am
The nine members present and one visitor were welcomed.
A total of 10 apologies were received.

General Business

Ross opened the meeting with only a smaller number of enthusiastic members attending, many of our members unwell or travelling. Our best wishes go to those unwell and a welcome back to John Crawford following surgery.

Our Newsletter for this month has taken on a new look with heavier grade paper. This encouraged some discussion with a decision, beginning in the New Year to make the cover pages in similar grade paper.

A check on our drying/pressing of *Aechmea fasciata* leaves indicated they would take many more weeks to be sufficiently dry to determine if you can distinguish leaf patterning such as banding or margination in a dried specimen.

A Neoregelia that Dave and Keryn had at the previous meeting with a dubious name has been identified as *Neoregelia* 'Blast'. A quick search on the BCR (Bromeliad Cultivar Register) using the name on Dave's tag as a starting point lead us to 'Blast'. It appears that maybe the original tag had the parentage on it with perhaps part of the naming fading only to leave one part of the parentage legible. For long term name tagging use a 2B pencil or forever use aluminium tags and emboss the name into it using a ballpoint pen or use a small engraving tool which work well on plastic labels also.

Trish, after much fruitless searching brought in *Neoregelia* 'Summer Light' for correct identification. It was suggested she investigate *Neo*. 'Summer Storm' and *Neo*. 'Sunset Rays'. Another suggestion was to go back to the seller, the person the plant was purchased from may be able to shed more light on the naming, perhaps this person bred it and never registered the name on the BCR. This is another reason why it pays to register your hybrids as it aids in checking names on dubious plants as not all unnamed or dubiously named plants are orphans.

The age old discussion on bromeliad names and their incorrect spelling or interpretations of what is written on labels is a constant source of both amusement and annoyance. An interesting example came to light, on a label several years ago was written "Hohenbergia ???", a friend of the original purchaser wished to acquire the same plant from the seller, ordering "Hohenbergia 777" as this is how the customer had interpreted the label. Moral - print clear and sharp.

Les was pleased to receive the feedback that came from Planet Bromeliad about his request to grow a better *Cryptanthus* 'Lisa Vinzant'. Les wishes to know or have suggestions as to how he can get the colour back into this Cryptanthus. At this months meeting Les distributed pups to some of the Group members so they too can try their luck in replicating the colour as seen on the BCR. Hopefully with a wider distribution of the plant in our area we may find the preferred growing conditions / light / potting medium / fertilising regime that best suits the elusive colour of this Cryptanthus. Hopefully good results and growing tips to come.

A request was made for interested members or member with some spare time to create an index of our Newsletters. In our volumes there have been many interesting genus and species written about, indexing would make accessing the information much easier. If you are interested in helping please let Ross know!

Show, Tell and Ask!

Keryn had two Vrieseas for identification, one was recognised as being *Vriesea platynema* var*. rosea*, the other required more growth and colour development so it was suggested that Keryn bring the Vriesea back in a few months time.

John Crawford brought along to show everybody the Orthophytum he brought to a meeting in 2016 (FNCBSG October 2016 Newsletter p.10) with pups growing through the holes in the base of the pot. Whilst recuperating from a knee operation John was unable to get down the steps to attend his shade houses. To his surprise and delight, when finally able to get down the steps, he found two of the three plants of his beloved pot of *Orthophytum glabrum* in flower. (photo p.10)

John also displayed a spectacular x*Nidumea* 'Pepe', a bigeneric cross between *Aechmea biflora* and *Nidularium* 'RaRu' created by Nat Deleon. John also had a *Vriesea hieroglyphica* with very interesting leaf markings on show. (photo p.9)

A collection of *Aechmea* 'Yamamoto's Flamingo' were on display which had been grown under various shade cloth colours and grades which hadn't seemed to have affected the patterning or colour strength noticeably. (photo p.10)

Ross showed an interesting *Puya* 'Rudolph' having a very delightful spray of unusually coloured mauve/fawn flowers. (photos and notes p.11)

Keryn and Dave have kindly offered to do a quiz as our Christmas Luncheon entertainment so sharpen your pencils everyone and bring your thinking caps as well as some goodies to eat!

For those into hybridising, Ross has suggested a future discussion on how to correctly write labels showing the parentage of crosses etc, any takers??

Green Thumbs a Target for Imported Fire Ants

Where are they from and how did they get here?

Fire ants are from South America and are native to the floodplains of the Paraguay River in Brazil, Paraguay and Northern Argentina. They entered the southern United States in the 1930s, probably in soil used as ship ballast, and have been spreading across the US ever since.

They're small, only 2 – 6 mm in size, but plenty of gardeners in the world have experienced the devastating impact of red imported fire ants.

Fire ants, which were first discovered in South East Queensland in 2001, live in turf, soil and mulch. They have an extremely painful sting and can destroy plants and insects, and potentially change an entire ecosystem over time.

National Red Imported Fire Ant Eradication Program Director, Sarah Corcoran, said it would be a catastrophic problem for Australia's horticultural industry if fire ants gained a foothold here.

"Fire ants have the ability to burrow through the roots of plants and eat or damage seeds and they also attack insects and animals that pollinate native plants." Ms Corcoran said.

"It's critical that fire ants are quickly identified and reported so that they can be safely eradicated."

"Fire ant nests often look like mounds of soft dirt, and if you poke at them with a stick, the ants will run out in all directions – so stand well back!"

"It's important that people don't attempt to destroy the ant nests themselves because if it's not done correctly the worker ants will simply evacuate their queen to a safe new location and start a new nest."

"Our technical officers use a combination of bait treatment and direct nest injection to destroy the ant nest."

"The bait we use is made of corn grit that is soaked in soybean oil and an insect growth regulator that sterilises the queen ant. Over a period of weeks the colony eventually dies out."

"The insect growth regulator we use is low concentration and has no health effects for humans or animals. It's similar to those used in mosquito control programs and flea collars for pets."

Ms Corcoran said that it was important to continue the investment in fire ant eradication as the alternative picture would be disastrous.

"We don't want the problem escalating in Australia the way it has in the United States, where they spend up to $U7 billion annually on damage repair, medical costs and control of fire ants," she said.

"These pests cause enormous damage to crops, gardens and livestock, and could potentially destroy the great outdoor lifestyle we have here in Australia."

"In some parts of the US, people can't enjoy their parks, outdoor venues or even their backyards due to the scourge of fire ants in their communities."

"If your business is involved in the movement and transportation of gardening materials, you need to be aware of fire ants."

"A restricted area and movement controls are in place to restrict the spread of fire ants in areas of South East Queensland by controlling the movement of high risk material such as soil, turf, mulch and pot plants."

"If you're in a restricted area you can protect your business by applying approved chemical treatments, conducting regular inspections and reporting suspect ants, and ensuring that you hold the appropriate approvals prior to moving materials."

"Whether you own a nursery, are a professional landscape gardener or simply enjoy getting out in your own garden on the weekends, it's essential that you can correctly identify and report fire ants so that we can quickly treat the nests and contain the problem."

Fire ants vary in size between 2 to 6mm and are coppery-brown in colour with a darker abdomen. They are aggressive and can inflict a painful sting.

For further information and to view the latest restricted area map visit: www.daf.qld.gov.au/fireants or call 13 25 23

Reprinted from: GCSB Bromlink January - February 2016

***Cryptanthus* ‘Lisa Vinzant’** Discovered by: Chanin Thorut.

A reverse variegation of *Cryptanthus fosterianus* ‘Elaine’.

Number of leaves: 15+; Leaf type: elliptic; Leaf serration dense; Medium leaf undulation; Oval radial symmetry; Cross section: curving up with median ridge; Plant size: (diameter) large, 30-45cm. Growth habit: Single—flat, Multiple—mounding; Offset reproduction: basal, between the leaves. Petal colour—white; Fragrance—none. Blooming conformation: flattens, blooms in rosette centre.

Distinguishing characteristics: this beautifully coloured plant when grown in good light has chocolate-brown coloured borders with variable width coral-pink central stripes. It retains the white sinuous barring of the species plant *Crypt. fosterianu*s. It has the reverse variegation of *Crypt*. ‘Elaine’, which has the majority of its dark pink stripes towards the edge of the leaves. The plant was named to honour Lisa Vinzant, an avid hybridizer and grower of bromeliads in Hawaii.
Description by Larry Giroux and photo by Chanin Thorut.

Published in Cryptanthus Society Journal, Vol 21, no. 4, p.132. (Oct-Dec. 2006).

The photo above shows what a *Cryptanthus* ’Lisa Vinzant’ should look like, but unfortunately the photo below of Les Higgins plant shows what most growers are achieving. However Doug Cross of Queensland noticed the lack of colour in his plant and by chance sat it on a heat pad to help get it through winter where it appeared to gain its colour back. As the weather warmed the plant was moved to the shade house under white shade cloth where it was hung close to the roof. It’s grown in a pot with a saucer underneath to help keep the plant moist but not wet. Receiving morning sun until around 11.00am also seems to help maintain the plants colour, the addition of a fertiliser with higher potassium than nitrogen helps boost it along.

Cryptanthus ‘Lisa Vinzant’
grown by Les Higgins

It appears as though temperature, light and humidity are the key to growing this ’not so easy’ beauty. With a little persistence, trial and error, investing in a heat pad for wintering your plant, your colour may return.

Vriesea hieroglyphica (Carriere) E. Morren, Ill. Hort. 31: 41, *pl.* 514. 1884.

Distribution: epiphytic in rainforest, from near sea level to over 800 m alt, Espirito Santo to Parana in eastern Brazil.

This is an attractive, large growing plant with a rosette that can grow to 1.5 mtrs across and 1.0 mtr high. The numerous bright green leaves are banded with dark green to brown or purplish markings. These wavy glyph like markings that resemble hieroglyphics give rise to the naming of this magnificent plant.

The multi-branched (2 to 3 pinnate) 1.5 to 2.5 mtr high inflorescence has many flowers with greenish - yellow bracts and yellowish petals that turn at 90° toward each other at anthesis. This trait helps identify that *Vriesea hieroglyphica* is a parent in a cross.

In northern NSW it grows best in a dappled light, cool, moist position with good air flow as it is a rainforest species.

Vriesea hieroglyphica var*. zebrina*
*“*Its main difference in relation to the *hieroglyphica* variety is not really its distinctive leaf ornamentation, but its floral bracts, which are zebra striped matching the leaf hieroglyphs”.

Derek Butcher: “I do know that in 1978 seed was sent to Australia under this name. The plants look awfully like John Arden’s *Vriesea* ‘Jungle Jade’ suggesting that in this batch of seed foreign pollen was supplied by one of the varieties of *Vriesea platynema*”.

Vriesea hieroglyphica
1st Open Trish Kelly

Dyckia 'Talbot Dark Moon' unreg.
1st Novice Dave Boudier

'Till I Get Some More '
1st Decorative Dave Boudier

'Bills in July'
1st Judges Choice Keryn Simpson

'It's a Hard Slog to the Market'
shown by John Crawford

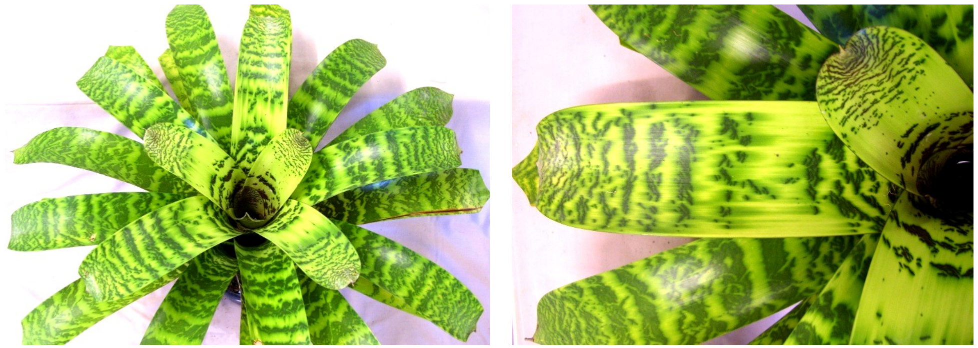
Cryptanthus 'Symphony'
grown by Les Higgins

x*Nidumea* 'Pepe'
grown by John Crawford

Neoregelia 'Magali'
grown by John Crawford

Neoregelia 'Bob and Grace'
grown by Laurie Mountford

Neoregelia 'Cinders'
grown by Keryn Simpson



John Crawford brought along to show us his *Vriesea hieroglyphica*
which was displaying some nice colour and leaf pattern.

Aechmea ‘Yamamoto’s Flamingo’
grown by Ross Little

‘Christmas in July’
shown by Helen Clewett

Puya ‘Rudolph’
grown by Ross Little

Photo’s supplied by: Ross Little

***Puya* ‘Rudolf’**

notes compiled by Ross Little

In the 1990s we had an interest in both Bromeliads and Cactus, by joining local Societies of each we were able to keep up with news from around the country relevant to our interests. At one of the Cactus Society meetings there was discussion about Tarrington Exotics in Victoria, a nursery owned by Rudolf Schulz specializing in rare and unusual succulents. Further enquiries enabled us to acquire some rather unusual plants that were not often seen in those days.

Several of these plants were tagged as ‘strange brom from Peru’, wild collected seed by Rudolf from somewhere in Peru was brought back to Australia in the 1980s and grown on. The resultant seedlings began to make their way around the country, the first of which were sent to Adelaide and on flowering were still a mystery. This Puya grows to around 1mtr across and flowers to 2.5mtrs high, the leaves are extremely well armed. More of these plants were grown in collections around Victoria and on flowering were thought to have links to *Puya floccosa* however on closer inspection of the floral parts there are noticeable differences. These wild collected seed, ‘strange broms from Peru’ were later named *Puya* ‘Rudolf’.

The next ‘strange brom from Peru’ to flower was another mystery still to this day also not solved, this one was to be named Puya ‘Schulz’.

So if you are one of the lucky people to have acquired one of these ‘strange broms from Peru’ they are still strange and unidentified by science but at least you can put a tag on them with their cultivar name.

Puya ‘Rudolf’
grown by Ross Little

Puya ‘Schulz’
grown by Len Colgan

Orthophytum glabrum (Mez) Mez, DC. Monogr. Phan. 9:117.1896.

Prantleia glabra Mez, Mart. Fl. Bras.3(3): 258, pl.58, fig.1,1891.

Type. *Pohl 3436* (holotype, BR.), Fazenda Inhumaes, Sao Miguel, Minas Gerais, Brazil, August 1820.

Distribution: On slopes, northeastern Minas Gerais, Brazil.

The "subcomplex *disjunctum*" in the genus Orthophytum (Leme 2004) is characterized by plants with leaves forming a distinct rosette before and at anthesis, scapose inflorescence, petals forming a tubular corolla at base, except for the suberect, but not cucullate, obtuse to acuminate apex. It groups together the larger number of species in comparison with the other subcomplexes and the most diverse ones as well, like the dwarf short scapose *Orth. saxicola* (Ule) L.B Sm., the giant long-scapose *Orth. horridum* Leme, the nearly glabrus *Orth. glabrum* (Mez) Mez and the scurfy *Orth. magalhaesii* L.B. Smith.

Orthophytum glabrum has thick fleshy, smooth glossy leaves that are armed with largish spines. It grows to around 30cm across and to about 1.0mtr tall when in flower. Grown in bright light the foliage turns bronzy orange in colour and greenish if in a shaded position. It offsets on long stolons which can be cut when the new plantlet is well formed. Best grown in the garden as it can form large clumps, therefore it needs plenty of room to allow it to spread. If grown in pots watch for those stolons / new plantlets coming out the bottom of the pot.

Orthophytum glabrum grown by John Crawford

A Brief Study into how Plants Function by David Higgins 2017

Part 6: Photosynthesis, C3, C4 & CAM - a very basic outline.

This article has been written by the series author's son, a scientific officer.

Plant photosynthesis takes place in the chloroplasts and has two main stages:

1. The Light Reaction

2. The PCR cycle (Photosynthetic Carbon Reduction cycle), also known as the Calvin Cycle or the Calvin-Benson cycle. The PCR cycle is sometimes called the Dark Reaction but this is misleading since the PCR cycle does not require darkness and is not inhibited by light.

The Light Reaction uses energy from light to split water molecules (H_2O). Energy, electrons and Hydrogen (H) are stored in ATP (Adenosine triphosphate) *and* NADPH (reduced nicotinamide adenine dinucleotide phosphate). Oxygen (O_2) is produced as a by-product of the Light Reaction.

The PCR cycle uses the energy, electrons and hydrogen stored in ATP and NADPH to "fix" CO_2 (carbon dioxide) gas. The enzyme Rubisco (ribulose-1,5-bisphosphate carboxylase-oxygenase) adds the carbon from a CO_2 molecule to a five carbon compound (ribulose 1,5-bisphosphate / RuBP) to form 2 molecules of a 3 carbon compound (3-phosphoglycerate).

Each of the 3-phosphoglycerate molecules is converted to a triose phosphate (Glyceraldehyde 3-phosphate / G3P*)* molecule which can be either used to make carbohydrates e.g. glucose and starch etc., or be fed back into the PCR cycle where five triose phosphates are used to make three new ribulose 1,5-bisphosphate molecules and continue the cycle. It takes six molecules of CO_2 to produce one molecule of glucose ($C_6H_{12}O_6$). Water (H_2O) is produced as a by-product of the PCR cycle.

Most plant species use only the basic PCR cycle, outlined above, and are known as C3 plants. C3 refers to the fact that the first detected carbon compound formed from CO_2 during photosynthesis is a 3 carbon compound 3-PGA (3-Phosphoglycerate or 3-Phosphoglyceric Acid). In C3 plants most of the chloroplasts are in the mesophyll cells of the leaves and the initial CO_2 capture and the PCR cycle take place in the same cell, at the same time.

When water availability is low and / or temperatures are high, plants close their stomates to conserve water, closing the stomates reduces the diffusion of CO_2 into the leaf, which reduces the CO_2 level in the chloroplasts. Low CO_2 level in the chloroplasts creates a problem for the PCR cycle known as photorespiration. During photorespiration Rubisco wastes energy by fixing O_2 instead of CO_2, producing a 2 carbon compound (glycolic acid) which then has to be converted back to CO_2.

Photorespiration can greatly reduce the efficiency of the PCR cycle. Factors that increase photorespiration include low CO_2 / high O_2 concentration in the chloroplasts, high light intensity and high temperatures. The C3 pathway can be extremely inefficient at high temperatures.

Many plants that are native to habitats with low water availability and/or high temperatures and/or high light levels and/or low CO_2 environments have physiological and anatomical adaptations, to conserve water and/or reduce photorespiration.

Two modifications of the photosynthetic pathway are:

1. The C4 pathway (Hatch-Slack pathway)

2. The CAM pathway (Crassulacean Acid Metabolism pathway)

The C4 pathway and the CAM pathway have both evolved independently, multiple times in different lineages of plants, so there are variations to both of the pathways described below, and there are some plants that use more than one pathway.

Leaves of C4 plants have a specialised anatomy known as Kranz anatomy, kranz is a German word for a wreath. In C4 plants most of the chloroplasts are in the bundle sheath cells which are arranged around the veins in the leaf. When a cross section of a C4 leaf is viewed under the microscope the bundle sheath cells look like wreaths around the veins.

C4 plants reduce photorespiration by increasing the concentration of CO_2 available for the PCR cycle by using an enzyme called PEP carboxylase (phosphoenolpyruvate carboxylase) is used to capture CO_2 from the atmosphere in the mesophyll cells and make a four-carbon acid (malate or oxalacetate), which is exported to the bundle sheath cells where the CO_2 is released and then fixed using Rubisco in the PCR cycle. The “C4” refers to the fact that the first detected carbon compound formed from CO_2 during photosynthesis is a 4 carbon acid.

PEP carboxylase is far more efficient at collecting CO_2 than Rubisco so C4 plants do not need to open stomates as much as C3 plants. The C4 pathway requires more ATP to fix CO_2 than the C3 pathway, but at high temperatures C4 plants can photosynthesise 3 to 4 times faster than C3 plants. The C4 pathway is advantageous to plants in tropical environments with high light intensity, high temperatures and/or limited water availability, but disadvantageous to plants in cool environments or low light levels. In C4 plants most of the chloroplasts are in the bundle sheath cells, the initial CO_2 capture and the PCR cycle take place at the same time, but in different cells.

Most CAM plants are from arid habitats and conserve water by opening the stomates to collect CO_2 at night when the humidity is high. PEP carboxylase is used to capture CO_2 and make a four-carbon acid (malate) which is stored in large vacuoles in the cell. During the day, while the humidity is low and the stomates are kept closed, CO_2 is released from the malate and then fixed using Rubisco in the PCR cycle. The CAM pathway requires more ATP to fix CO_2 than the C3 pathway.

During dry spells CAM plants can keep the stomates closed and “CAM-idle” - oxygen given off in photosynthesis is used for respiration and CO_2 given off in respiration is used for photosynthesis. CAM-idling allows the plant to survive long dry spells, and allows the plant to recover quickly when water is available. However a plant cannot CAM-idle forever. In CAM plants most of the chloroplasts are in the mesophyll cells, the initial CO_2 capture and the PCR cycle take place in the same cell but at different times (CO_2 capture by night & PCR by day). There are also a few aquatic CAM plants which open the stomates to collect CO_2 at night when the CO_2 concentration is highest. The malic acid gives the leaves of CAM plants a characteristic acidic taste at dawn that disappears as the day progresses.

The significance for the gardener is that all plants have anatomical and physiological adaptations to suit their natural environments. Gardeners who provide conditions that suit the plant's physiological requirements, including the photosynthetic pathway, are likely to grow plants more successfully than gardeners who just group their plants arbitrarily by family/ genus/ species/ colour/ size etc.

C3 plants generally prefer well watered, temperate habitats with moderate light and are humid during the day. C3 plants usually have thin, soft leaves with most of the chloroplasts in the mesophyll cells and lack large vacuoles in the leaves.
Example of a C3 plant: *Cryptanthus beukeri*.

C4 plants generally prefer brightly lit, tropical habitats that are hot during the day. The C4 pathway only occurs in angiosperms most are monocots - approximately half of the world's grass species use C4 photosynthesis.
Examples of C4 plants: sugar cane, maize, kikuyu grass, couch grass.

CAM plants generally prefer well lit locations that are dry by day and humid at night. CAM plants usually languish (or die) in cold, dark, damp conditions. The leaves of CAM plants are generally thick or succulent with large vacuoles in the cells. CAM occurs in angiosperms, a few ferns e.g. *Pyrossia*, the gymnosperm *Welwitschia,* and in the lycophyte *Isoetes.*

Examples of CAM plants: Ananas, Cactus, Crassula, *Zamioculcas zamiifolia* and many other succulents, epiphytic bromeliads & orchids.

Some plants are Facultative CAM plants i.e. C3 or C4 if well-watered, but change to CAM when drought stressed.

Note:
Stomates is English and used in this article.
Stomata is American plural with Stoma singular and used in all other articles of this series.

Also read three complementary articles:
Photosynthesis for Bromeliad Gardeners by Don Beard.
FNCBSG NSW Newsletters: April, July, August 2012.
(Contact the editors for electronic copies of these issues)

Novice Popular Vote

1st	Dave Boudier	*Dyckia* 'Talbot Dark Moon' unreg.
2nd	Keryn Simpson	*Neoregelia* 'Cinders'
3rd	- - - - - - - - - -	- - - - - - - - - -

Open Popular Vote

1st	Trish Kelly	*Vriesea hieroglyphica*
2nd	John Crawford	*Neoregelia* 'Magali'
3rd	Les Higgins	*Cryptanthus* 'Symphony'

Judges Choice

1st	Keryn Simpson	'Bills in July'

Decorative

1st	Dave Boudier	'Till I Get Some More'

Where do I Find the Dates ?
www.bromeliad.org.au then click "Diary".
Check this site for regular updates of times, dates and addresses of meetings and shows in your area and around the country.