



Far North Queensland GIS User's Group Inc.

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In This Issue



FUNGIS Newsletter October - December 1997

Editorial	Page 1
Presidents Message	Page 2
Executive Committee Members Contact Numbers	Page 3
The Development of a Spatio-Temporal Environmental Sensitivity Index	Pages 4,5,6,7
Travelgate Fallout	Page 7
NASA's Lewis re-enters atmosphere	Page 8
Q.L.I.S.	Page 9
Trinity Software	Page 10
Cairns City Council News	Page 12
GIS in Education	Page 12
Upcoming Events	Page 13
Restructuring Decisions at the North Pole	Page 14,15
FUNGIS Registration Form	Page 16

EDITORIAL



Just a quick note to introduce myself as the new newsletter editor. My interest in GIS began some 8 years ago when I approached the Geography Department at Monash University to see if they had a course in GIS. At the time it was a logical step in developing a solid basis for environmental debate that allowed a more honest balancing of social, economic, political and environmental variables. Unfortunately GIS was still in it's educational infancy and I undertook a masters degree focused on environmental law, policy, decision making and action. I also have a passion for Outdoor Education which ties in closely the development of GIS. Before moving to FNQ three and a half years ago I spent a year in Japan teaching English and studying compact living. At present I am working as the Senior Geography Teacher at Trinity Anglican School where I have been successfully introducing GIS into the curriculum with the aid of Cairns City Council over the past two years. I see GIS as a means of involving and empowering industries, communities, administrations and individuals through graphical access to the infinite amount of data being generated by the technological era we are all pioneering. As such I hope to present a newsletter which stimulates connections in an informative and friendly manner. I look forward to hearing from one and all, with information of interest to our ever growing community of GIS users in the Far North.

Utz has been busy updating and moving our Web page. He stresses that it is only in its early days and comments and feedback from all are welcomed. The web site is <http://www.fastinternet.net.au/~utz/FUNGIS.html>. Contact numbers for Utz are on the following page.



We have decided to put together a calendar of events for 1998, if you or your company have any events that you think would be suitable please give Sharlene a call. To ensure this calendar is ready before Christmas Sharlene would need your contributions by the end of November. The main event to keep free is our seminar on the 28th November 1997, titled "GIS in the FIG TREE". The attached invitation will reveal all (well maybe not all).



Enough from me, I hope you enjoy my first edition.

Tony Dawson

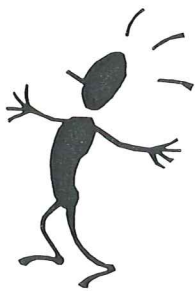
PRESIDENT'S MESSAGE

With the 1997 Fungis year drawing to a close, I am no exception to most and reflect over the past year. Nargis, obviously the highlight and am looking forward to the return trip to Darwin with a local contingent. The social expertise of some of our Northern Territory visitors should not go unchallenged. The progress made in the promotion of GIS through the



Education System has also been a highlight for me personally and my thanks go to Terry and all other FUNGIS members who have been involved. The diversity of use and continued technological advances of our industry has been most evident in the past twelve months and maintaining pace with this progress is a major role for all involved.

Looking to the future, the new members of the Fungis Committee, will I'm sure provide fresh ideas and proactive involvement in the Committee, especially from the new area of the Education Environment and am looking forward to the already regenerated, refreshed approach to the Role of Fungis (eg. Rowdy's Fungis Business Plan, Energiser's Newsletter & The Bosses new push and shove)



The final seminar for the year is intended to provide members with a more informal, casual atmosphere so why not a local Irish pub as a venue. The presentations made will be from the areas of Local Government, Natural Resources and the Sugar Industry, followed by refreshments and socialising in the Xmas spirit after. Looking forward to members attendance at this final seminar and the Fungis year ahead.

Have a safe and family Xmas/New Year, recharge the batteries with a good break and come out ready for 1998.



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THE DEVELOPMENT OF A SPATIO-TEMPORAL ENVIRONMENTAL SENSITIVITY INDEX

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Abstract

A coastal shorelines potential vulnerability to oil spill damage maybe quantitatively ranked using a classification scheme known as the Environmental Sensitivity Index (ESI). The vulnerability ranking's of 1 to 10 are based primarily upon the geomorphology and physical coastal processes of a shoreline and are hence static in nature. The limitation of these indexes is that they do not consider the biological diversity and temporal nature associated with most coastal regions. Geographical Information Systems (GIS) provide the opportunity to develop a modified ESI that takes into consideration the spatio-temporal nature of the coastal zone and its biological resources.

1. Introduction

Prevention of oil spills is of paramount importance as clean-up and response methods remain both primitive and inadequate. ESI atlases provide a means of identifying and prioritising coastal resources at risk to oil spills for use in contingency plan development and oil spill clean-up operations.

On the basis of research (Gundlach and Hayes, 1978) and field studies of several major spills in the 1970's, a classification system known as the vulnerability index was developed to associate shoreline types with oil longevity and biological impact (Jensen *et al.*, 1990). A shorelines sensitivity to oil damage is thereby ranked on a scale of 1 to 10 (low to high sensitivity).

The basis of the vulnerability index is the relationship between the physical and biological characteristics of a coastal environment. (Owens and Robilliard, 1981; Hayes *et al.*, 1992). There are four main factors which determine the relationship between the physical and biological characteristics of a coastal ecosystem:

1. Relative exposure to wave and tidal energy.
2. Shoreline slope.
3. Substrate type (grain size, mobility, penetration, and trafficability).
4. Biological productivity.

2. The digital ESI atlas



The application of GIS technology has added great flexibility to the production and use of an ESI atlas. It is no longer a static product of limited usage but an automated information system that has the ability to record and maintain data, readily produce up-to-date maps and most importantly allow spatial queries to be performed. An ESI atlas is not restricted to oil spill contingency planning, but has the potential to be utilised effectively in a much broader context for coastal management.

A digital ESI atlas contains three general types of information:

- Shoreline sensitivity classification (ESI ranking)
- 2. Biological resources
- 3. Human resources

3. Spatio-temporal data

An ESI classifies the sensitivity of a shoreline to oil inundation through the application of a numerical ranking scheme. The typical classification scheme does not consider the fact that coastlines which are physically similar are not always biologically similar (hence varied in sensitivity to oil spills). Many classification schemes do not directly include biological resources, rather they are inferred (Owens and Robilliard, 1981).

The diverse and complex nature of biological features results in the proposition that the spatio-temporal aspects of biological features be included in the classification scheme. Traditional techniques of ESI ranking have not directly incorporated spatio-temporal aspects often associated with environmental data, limiting the range of input variables which can be included and the analysis techniques that can be employed. An example illustrates the need for the inclusion of spatio-temporal aspects:

Traditionally a bird habitat would be indicated on an ESI atlas by a symbol and this might influence the ESI ranking of the coastal zone. There is no correlation between the ESI ranking and bird occupancy. In the case of a migratory species, it is possible that for much of the year, a site ranked as highly sensitive could be quite low in sensitivity due to the absence of the bird population. A modified ESI ranking would take into account both the spatial and the temporal aspects and produce a more complex and accurate sensitivity ranking for the bird habitat.



4. Case study

Western Port is a large, semi-enclosed body of water often referred to as Westernport Bay. The bay was formed from a sunken river bed and contains French Island and Phillip Island. 270 square kilometres of the bay (about 40% of the total area) is intertidal mud flats. The bay environs is home to approximately 65% of the known bird species in Victoria and over 1350 species of marine invertebrates (Gittens and McColl, 1974). The large inter-tidal area results in massive exchanges of water between different parts of the bay during tidal changes. However, this tidal flow does not extend to the ocean outside the bay and water in the northern end of the bay can take up to twelve weeks to circulate through the bay and mix with ocean waters outside (Harris *et al.*, 1979).

The Australian Maritime Safety Authority (AMSA) and the Victorian (National Plan) Marine Pollution Committee (V(NP)MPC) have funded the development of a Coastal Resource Atlas (CRA) for Western Port. This atlas was created under contract by the Marine and Freshwater Resources Institute (MAFRI)

The availability of data, the rich diversity of the biological resources of Western Port and the large number of migratory species that inhabit the bay (ANCA, 1997) make it an ideal area for a case study to investigate the inclusion of temporal factors in a GIS to establish ESI values for coastal zones.

5. Conclusion

This research aims to develop a modified ESI which incorporates the spatio-temporal aspects of a coastal environment ecosystem. The project will develop a standard ESI model for Western Port, based on the guidelines published by NOAA (Research Planning, Inc. 1996). A refined ESI will be produced that incorporates the temporal component of species and activities in the area. The refined ESI values for specific times will be compared with the values obtained from the standard ESI model to determine the variation in sensitivity that occurs over time.

6. Acknowledgments

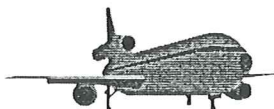
The support of the Marine and Freshwater Resources Institute, the Australian Maritime Safety Authority and the Victorian Marine Pollution Committee in making the coastal resource atlas for Western Port available is gratefully acknowledged.

Thanks are also extended to Mr David Ball of MAFRI for his advice and help in obtaining the coastal resource atlas.

7. References

- Australian Nature Conservation Agency (ANCA), 1997, 'Site 19 - Western Port', <http://www.environment.gov.au/land/wetlands/RAMSAR/site19.html>, -accessed 9th March.
- Bellman, C.J., Ellis, G., and Fisher, B.R., 1997, 'Modifying Environmental Sensitivity Indexes Using Geographic Information Systems', *Northern Australia Remote Sensing & Geographic Information System Forum*, 28 - 30 April 1997, Cairns, Australia.
- Gittens W.J. and McColl J.C., 1974, 'The collection and preparation of data on existing land-use in the Westernport Bay Catchment', Brief no. L3, Western Port Environmental Study, May, 1974.
- Gundlach, E. R. and Hayes, M. O., 1978, 'Vulnerability of coastal environments to oil spill impacts', *Marine Technology Society Journal*, vol. 12, no. 4, pp. 18-27.
- Harris, J.E., Hinwood, J.B., Marsden, M.A.H. and Semberg, R.W., 1979, 'Water movements, sediment transport and deposition, Western Port, Victoria'. *Marine Geology*, vol. 30, pp. 131-161.
- Hayes, M., Hoff, R., Michel, J., Scholz, D. and Shigenaka, G., 1992, *An Introduction to Coastal Habitats and Biological Resources for Oil Spill Response*, Hazardous Materials Response and Assessment Division, NOAA, USA.
- Jensen, J. R., Ramsey, E. W. III, Holmes, J.M., Michel, J.E., Savitsky, B. & Davies, B. A. 1990, 'Environmental sensitivity index (ESI) mapping for oil spills using remote sensing and geographical information systems technology', *International Journal of Geographical Information Systems*, vol. 4, no. 2, pp. 181-201.
- Owens, E.H., and Robilliard, G.A., 1981, 'Shoreline sensitivity and oil spills - a re-evaluation for the 1980's', *Marine Pollution Bulletin*, vol. 12, no. 3, pp. 75 - 78.
- Research Planning, Inc., 1996, 'Environmental Sensitivity Index Guidelines'. NOAA Technical Memorandum NOS ORCA 92. Seattle : Hazardous Materials Response and Assessment Division, National Oceanic and Atmospheric Administration.

FEDERAL EVENTS OF IMPORTANCE Travelgate Fallout



Events in the Federal parliament last week have affected a number of key individuals in the spatial information arena. Mr David Jull, the minister responsible, through the Department of Administrative Services, for the Australian Survey and Land Information Group, has been kicked off the front bench, So has Mr Peter McGauran, the science minister; who has responsibility for CSIRO.

It is not clear yet whether the departure of either man will have much effect on government policy. In both cases, major policy initiatives - the downsizing of AusLIG and the beginnings of a space-based remote sensing capability - have already been accomplished. However; in neither case is a natural successor apparent. Political commentators close to the process say that a lack of obvious talent will make it difficult for Prime Minister Howard to fill either position.

Lobby groups have already begun to put pressure on Howard, particularly in the case of the science ministry. The Australian Academy of Science's Sir Gustav Nossal says Howard should take the opportunity to make science a cabinet portfolio, and give the role to a senior minister McGauran was a junior minister. In an interview with *Australian Associated Press*, Sir Gustav says, "The vacancies created in these portfolios provide the Prime Minister with an opportunity to give greater weight to the role of science and technology".

The president-elect of the Federation of Australian Scientific and Technological Societies, Professor Peter Cullen, said the crisis would set back the process of developing new and better policies in science, technology and industry.

"The government is presently considering several major reports, including the Mortimer Report, the Stocker Review, and the Goldsworthy Report. It is a time which calls for a government with vision and steady resolve. Government needs these qualities to put in place a set of policies which will help industry government and research organizations work together to generate wealth-creating industries in Australia."

Professor Cullen urged the prime minister to consider carefully the options before him in selecting a successor to Mr McGauran, and also urged that the new minister be a member of Cabinet. McGauran resigned after admitting he wrongfully claimed \$1482 in travel allowances, and then lied about it in parliament. Mr David Jull was sacked by the Prime Minister for failing to disclose travel costs by another minister; Mr John Sharp. Sharp was also sacked.

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Lewis Re-Enters Atmosphere



In a sad footnote to an ambitious plan to fly a hyperspectral remote sensing spacecraft on the cheap, NASA's Lewis spacecraft re-entered the Earth's atmosphere on 28 September, over the South Atlantic coast of Antarctica.

The spacecraft was tracked from its launch 22 August by the United States Space Command. The launch was flawless. However, on reaching a low level parking orbit, it appears one of the small thrusters used to control the attitude of the spacecraft stuck in the firing position. As engineers at NASA re-constructed events, it seems this caused Lewis to begin to spin. This meant its solar panels could not track the sun, its batteries could not be recharged, and its receiver could no longer receive commands from Earth. As a result the craft drifted helplessly along the top of the atmosphere, slowly losing energy due to friction caused by air molecules.

A note from Space Command says it is not possible to predict whether the satellite survived reentry. However, it was not designed to do so, and probably burned up in the atmosphere. Lewis was built by TRW Space and Electronics Group, Redondo Beach, California, for NASA. It was part of NASA's Small Spacecraft Technology Initiative.

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STATE EVENTS OF IMPORTANCE

Queensland Land Information Strategy

Benefit Study May 1997

Spatial information in Queensland is entering a new era. Information resources previously restricted to a single agency will be available right across Government, Business and the Community.

The opportunity to realise the benefits of long term investment in Government information has arrived. With the assistance of recent innovations in information technology and communications, taking action on the recommendations of the QLIS Benefit Study will progressively deliver State wide benefits.

Benefit Study Recommendation Highlights

- Far North Queensland has been identified as one of the **Information Priorities - Growth Regions**
- Twenty-two essential information products were identified. The projected benefits to the State exceed \$350 million over the next six years.
- New State co-ordination structure will be established to deliver benefits.
- Planned development of Spatial Information component of the Government's State Information Infrastructure.
- Regional information and data priorities will drive product development.
- Joint ventured Government and Industry development of Statewide data sets, information products and services.

To achieve projected benefits identified in the Benefit Study the Queensland Land Information Council, (QLIC) has endorsed the following Study recommendations:

1. State Spatial Information Infrastructure.

A Spatial Information component will be developed, primarily comprising 22 essential state information products, and will complement the State Information Infrastructure proposed by the Information Planning Board (IPB), Department of Premier and Cabinet.

2. **Regional Focus.** Specification of information products be driven by local information and data priorities. Initially products will be developed over major growth regions- Wide Bay - Burnett; Brisbane - Moreton; Far North and Fitzroy . Collectively this will form the basis of a State Spatial Information Infrastructure which will emerge progressively over the next 6 years.
3. **Key Partnerships. Government, Local Government and Industry.** Government and Industry will jointly specify, fund and develop the state spatial information infrastructure, using the concept of *business information products* as the building blocks. The development of each information product will be directly related to identified business needs and substantiated by a prepared business case and risk analysis.
4. **Queensland Spatial Data Infrastructure (QSDI).** The development of the 22 essential information products will be supported by the QSDI which will be updated according to nationally recognised standards and specifications. The target is to accelerate data coverage and enhancement in priority areas of the State to align with the product development process.

Spatial Information Opportunities

The traditional application areas, land administration and natural resources dominate investment in the technology to date. The most significant opportunities for spatial information to contribute to the State's economic and social development, and environmental well-being are in

Economic Development

- Mining
- Major Projects Facilitation
- Integrated Planning of Growth Centers
- Infrastructure Management

Social Development

- Community Facilities Optimisation
- Public Safety

Environmental Well-being

- Ecologically Sustainable Development

LOCAL NEWS

Trinity Software (Robert Crossley)

Robert Crossley (now trading as Trinity Software) has recently taken on the distribution of software developed by an American firm named VectorVision. Robert says, "They have a number of products that are useful for people who, like myself, use aerial photos as part of their normal GIS operations. Initially I used the software for my own work and found that despite some initial problems, the software worked well. Then I recommended it to a number of clients and received favorable feedback, so I decided to take the next step and take on the distribution of their products."

Their main product is the Image Positioning System (IPS) software that stretches both vector (polygons, lines etc,) or raster data such as aerial photos or scanned maps to fit known coordinates or other data. The software integrates well with MapInfo, but can be used without MapInfo and could be useful to ArcInfo or even AutoCad users. The result is that you can easily stretch scanned data or vector data to fit data which is known to be more accurate.

Robert continues, "Mackay Sugar and Pioneer Mill used the software to get better registration of aerial photography when they captured their sugar cane assignments last year. I have also used it a lot to improve the spatial accuracy of aerial photos, scanned maps and poorly registered vector data."

The IPS software is supplemented with another product called TileGen. TileGen splits a set of rectified, georeferenced images into smaller, edge-matched square tiles that can be displayed more easily in a GIS.

"Combined with using the seamless layer feature in MapInfo, these tiles can form a complete high resolution orthophoto of a region made from many images. The display of that image is rapid because the data is in manageable chunks. So far I have used the software to create two mosaics, each with about 8 air-photos, and they appear as if they are a single photo."

Other products are available to clean up vector data that has been created from raster-to-vector converter, and polygons building tools.

For more information about these products, call Robert at 070 314 877.

Robert Crossley & Associates
10 Trinity Street
CAIRNS QLD 4870

Trinity Software - Making information available to those who use it

Cairns City Council

The initiatives if the Cairns City Council has seen the introduction of the GIS software Latitude, together with a data package into four schools in the Cairns area Trinity Anglican School, St Mary's, Trinity Bay High School and Woree High School.



SCHOOLS

GIS in Education

A Model of Integration of GIS into K-16 Education

(The following is an extract from <http://danenet.wicip.org/gisedu/about.html>)

GIS by Educational Level

The grant's implementation will also involve three potential levels of GIS technology:

Level 1 (grades 2 and up) - Developing a Sense of Place

Use of maps (initially with basic physical maps and moving into GIS layers) to explore the characteristics of the local and regional area and how these characteristics change with scale (spatial and temporal). Potential study characteristics include, meteorological (weather stations), geological, biological, historical, and demographic.

Level 2 (grades 4 and up) - Contributing to OH? Knowledge of Place

Development of skills for collecting environmental monitoring data for entering into a GIS format. Students will also use GIS technology to detect patterns and answer simple questions about these data.

Level 3 (grades 6 and up) - Involvement in Land Use and Resource Management

Use of modeling and statistical tools for analysis of patterns and trends in GIS data; development and exploration of "what-if" models for exploring and evaluating alternative resource management and land use scenarios; formulation of policy recommendations regarding resource management and land use at scales ranging from school campuses to communities to regions.

Trinity Anglican School

TAS is currently involved in undertaking the following projects:-

- Developing a project map for study of the Upper Barron Catchment
- Developing a project map for study of Fitzroy Island
- Developing a project map for study of Green Island
- Mapping a Pictorial Database of 1997 yr 9 camp activities
- Mapping Trinity Anglican School's buildings and grounds
- Pictorial Database of Trinity Anglican School buildings and grounds
- Creation of a database link file to access student records spatially
- Mapping real estate value in the Gordonvale area.

TAS is also combining GIS project work with Community Service, Skills and Expedition aspects of the Duke of Edinburgh's Award and is looking for meaningful projects within the local community for students to undertake.

The person to contact regarding projects is Mr Tony Dawson (Ph.070 362955) or Email <tonyd@tas.qld.edu.au>



UPCOMING EVENTS

2-5 November: Information Technology Management Group 17th Annual Conference; Wairakei, Taupo, New Zealand; Mr Graeme Marshall on +64-4-472-4789.

2-6 November: 10th International Congress of the International Society for Mine Surveying - Mining in the Third Millennium - The Social and Environmental Impact; Fremantle, WA; Promaco Conventions on +61-9-364-8311; fax: +61-9-316-1453; cpromaco@promaco.com.au; www.promaco.com.au

4-7 November: 4th International Distribution Utility Conference; Sydney; ph: +61-3-9646-4122; fax: +61-3-9646-7737; <convnet@peg.apc.org>; www.convention.net.au

10-11 November: 1997 Annual Research Seminar; School of Geomatic Engineering, University of NSW; Mrs Helva Frangoulis on +61-2-93854197; fax: +61-2-93 13-7493; <h.frangoulis@unsw.edu.au>

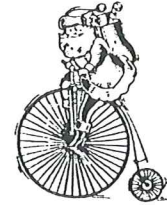
17-21 November: AURISA 97, Information Change -Back to the Future; Christchurch, New Zealand; Conference Professionals on +64-3-365-0885; fax: +64-3-377-7801; <enquiry@aurisa97.org.nz>; www.modjadjj.anu.edu.au/aurisal

23-26 November: 1997 National General Assembly of Local Government; Canberra; Conference Logistics on +61-6-281-6624; fax: +61-6-285-1336.

24-28 November: Erdas Imagine course; Melbourne; ESRI on +61-2-9241-2138.

28 November: FUNGIS seminar "GIS in the FIG TREE", 2pm The Fig Tree, Sheridan Street, Cairns;

RESTRUCTURING DECISIONS AT THE NORTH POLE



The recent announcement that Donner and Blitzen have elected to take the early reindeer retirement package has triggered a good deal of concern about whether they will be replaced, and about other restructuring decisions at the North Pole.

Streamlining is due to the North Pole's loss of dominance of the season's gift distribution business. Home shopping channels and mail order catalogues have diminished Santa's market share. He could not sit idly by and permit further erosion of the profit picture.

The reindeer downsizing was made possible through the purchase of a late model Japanese sled for the CEO's annual trip. Improved productivity from Dasher and Dancer, who summered at the Harvard Business School, is anticipated. Reduction in reindeer will also lessen airborne environmental emissions for which the North Pole has received unfavorable press.



I am pleased to inform you that Rudolph's role will not be disturbed. Tradition still counts for something at the North Pole. Management denies, in the strongest possible language, the earlier leak that Rudolph's nose got that way, not from the cold, but from substance abuse. Calling Rudolph "a lush who was into the sauce and never did pull his share of the load" was an unfortunate comment, made by one of Santa's helpers and taken out of context at a time of year when he is known to be under executive stress.

As a further restructuring, today's global challenges require the North Pole to continue to look for better, more competitive steps. Effective immediately, the following economy measures are to take place in the "Twelve Days of Christmas" subsidiary:

The partridge will be retained, but the pear tree never turned out to be the cash crop forecasted. It will be replaced by a plastic hanging plant, providing considerable savings in maintenance.

The two turtle doves represent a redundancy that is simply not cost effective. In addition, their romance during working hours could not be condoned. The positions are therefore eliminated.

The three French hens will remain intact. After all, everyone loves the French.

The four calling birds were replaced by an automated voice mail system, with a call waiting option. An analysis is underway to determine who the birds have been calling, how often and how long they talked;

The five golden rings have been put on hold by the Board of Directors. Maintaining a portfolio based on one commodity could have negative implications for institutional investors. Diversification into other precious metals as well as a mix of T-Bills and high technology stocks appear to be in order;

The six geese-a-laying constitutes a luxury which can no longer be afforded. It has long been felt that the production rate of one egg per goose per day is an example of the decline in productivity. Three geese will be let go, and an upgrading in the selection procedure by personnel will assure management that from now on every goose it gets will be a good one;

The seven swans-a-swimming is obviously a number chosen in better times. The function is primarily decorative. Mechanical swans are on order. The current swans will be retrained to learn some new strokes and therefore enhance their outplacement;

As you know, the eight maids-a-milking concept has been under heavy scrutiny by the EEOC. A male/female balance in the workforce is being sought. The more militant maids consider this a dead-end job with no upward mobility. Automation of the process may permit the maids to try a-mending, a-mentoring or a-mulching;

Nine ladies dancing has always been an odd number. This function will be phased out as these individuals grow older and can no longer do the steps;

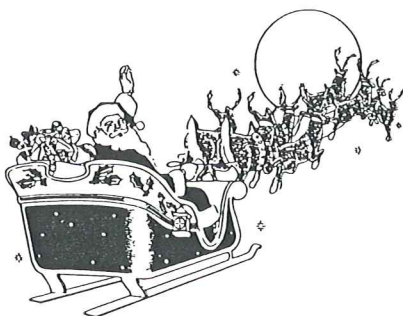
Ten Lords-a-leaping is overkill. The high cost of Lords plus the expense of international air travel prompted the Compensation Committee to suggest replacing this group with ten out-of-work congressmen. While leaping ability may be somewhat sacrificed, the savings are significant because we expect an oversupply of unemployed congressmen this year;

Eleven pipers piping and twelve drummers drumming is a simple case of the band getting too big. A substitution with a string quartet, a cutback on new music and no uniforms will produce savings which will drop right down to the bottom line;

We can expect a substantial reduction in assorted people, fowl, animals and other expenses. Though incomplete, studies indicate that stretching deliveries over twelve days is inefficient. If we can drop ship in one day, service levels will be improved.

Regarding the lawsuit filed by the attorney's association seeking expansion to include the legal profession ("thirteen lawyers-a-suing") action is pending.

Lastly, it is not beyond consideration that deeper cuts may be necessary in the future to stay competitive. Should that happen, the Board will request management to scrutinize the Snow White Division to see if seven dwarfs is the right number.



**Merry Christmas
and a Happy New Year
to all**



Far North Queensland GIS User's Group, Inc.

41 Basalt Street, Mareeba Q 4880 Phone: (070) 928549 b/h (070) 924605 a/h

The FNQ GIS Users Group encourages the use of Geographic Information Systems (GIS) in Far North Queensland and provides a forum for discussion and information exchange on matters relating to GIS. The group is a local professional association comprising members from Federal, State and Local Government departments as well as private enterprise.

New memberships are valid from the quarter they are paid for three consecutive quarters. Corporate membership allows an organisation to nominate up to 5 people for the mailing list and up to 5 people receive members rates at workshops and seminars.

ANNUAL MEMBERSHIP SUBSCRIPTION TO THE FAR NORTH QUEENSLAND GIS USERS GROUP INC.

NAME : _____

ORGANISATION: _____

ADDRESS: _____

_____ POSTCODE: _____

PHONE: _____

FAX: _____

EMAIL: _____

PLEASE INDICATE THE TYPE OF ANNUAL MEMBERSHIP REQUIRED

CORPORATE

INDIVIDUAL

CONCESSIONAL

\$50

\$30

\$10

(PLEASE CIRCLE)

ENQUIRIES CAN BE MADE TO THE ABOVE ADDRESS AND PHONE NUMBER
PAYMENTS MUST ACCOMPANY REGISTRATION FORM

