



NSW National Parks  
and Wildlife Service

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**RECEIVED**

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**LEGISLATIVE  
COUNCIL**

Mr John Young  
Principal Council Officer  
Select Committee on Recreational Fishing  
Parliament House  
Macquarie Street  
SYDNEY NSW 2000

Dear Mr Young

Thank you for the letter of 10 September 2010 enclosing a copy of the transcript of evidence taken at the Select Committee hearing on 3 September 2010, questions taken on notice at the hearing and additional questions on notice from members.

I am pleased to attach a corrected transcript and answers to questions on notice. Industry and Investment NSW have separately answered questions relevant to fisheries management responsibilities.

I am currently intending to provide a further submission on the key issues raised in the Inquiry regarding marine parks. You should have this submission within two weeks.

If you have further questions please do not hesitate to contact :

Yours sincerely

8.10.2010

**Michael Wright**  
**Director, Protected Area Policy and Programs**

Enclosure



**Responses to questions on notice from Members of the Select Committee for the Inquiry into Recreational Fishing to DECCW arising from hearing of 3 September 2010**

**DECCW witnesses:**

Mr Michael Wright, Director, Protected Areas Policy and Programs

Mr Adrian Toovey, Manager, Aquatic Protected Areas

Dr Kate Wilson, Executive Director Scientific Services

**Glossary**

benthic	relates to the seafloor and the organisms that live on or in the sediment
biodiversity	this has different measures; including inter alia a) the number and variety of organisms found in a specific region; b) that number represented by the biomass (weight of all organisms); c) (increasingly:) the genetic diversity of the organisms in a region
demersal	species that live at or near the seafloor, in some cases living in the sediments and periodically emerging into the water
pelagic	species living in the open water
sessile	species that are permanently attached to surfaces (such as the seafloor, rocky reefs or structures in the sea)
trophic	involving the feeding habits or food relationship of different organisms in a food chain

**Questions on notice and responses:**

**QUESTION**

Is it possible to supply the whole report? (p. 10)

**ANSWER**

The Marine Parks Compliance Report 2009-10 is attached (Attachment 1).

**QUESTION**

Where is Hexham up to in terms of re-inundation and promises made back in the mid nineties? (p. 14)

**ANSWER**

The Hunter-Central Rivers Catchment Management Authority is actively restoring approximately 2000 hectares of Hexham Swamp in the Hunter River estuary. In 2008 Hexham Swamp became part of the Hunter Wetlands National Park.

Floodgates installed on Ironbark Creek in the 1970's have significantly reduced tidal inundation within the Creek and its tributaries and have resulted in a decline in estuarine wetland habitats throughout Hexham Swamp.

Approval was granted in 2008 to open floodgates on Ironbark Creek in a staged manner to gradually reintroduce tidal waters into the Creek and low lying areas of Hexham Swamp. The first floodgate was opened in December 2008 and favourable results from monitoring of

water quality, insects, and inundation of surrounding areas, led to the approval in December 2009 for the opening of two more floodgates.

Currently, with three gates partially open (equivalent to 2 gates fully open), early monitoring results indicate that water levels and quality, tidal ranges and changes in vegetation are significant and consistent with predictions. Substantial areas of the Swamp are being inundated with saline tidal waters, mainly into areas vegetated with *Phragmites* (a common swamp reed that is known to have a limited tolerance for saline waters and is expected to start to die off within one-to-two years).

Further adjustments to the floodgates will be considered once the environmental effects of the current stage (with three floodgates partially open) have been clearly demonstrated. The environmental response of the Swamp should be assessed and reconsidered after the 2010-2011 summer period at which time a decision can be made regarding progression to the next stage of the project. This adaptive management approach means that the timing and eventual re-opening of all eight floodgates is dependant on flooding and habitat response.

#### **QUESTION**

Does this just refer to fishes or also the sessile? (p. 22)

#### **ANSWER**

It refers to both pelagic (such as fish) and sessile marine species.

The biological assessments conducted within NSW marine parks to assess the distribution and diversity of habitats and species is based around the seabed mapping program that uses acoustics to define the extent and structure of the seabed and underwater towed video to characterise the dominant sessile floral and faunal assemblages, the immobile lifeforms attached to the underlying surface (substratum). There is also detailed information available on the distribution of seagrass, mangroves and saltmarsh for all estuaries along the NSW coast. Quantitative surveys of fishes, macro-invertebrates and sessile organisms have also been conducted at many of the shallow rocky reefs throughout the marine parks. For example, this includes a total of 33 sites at Lord Howe Island, 27 sites in Jervis Bay Marine Park and 22 sites in Batemans Marine Park. Some of these surveys have been conducted over many years and structured to examine differences between changes observed within sanctuary zones compared to areas still fished. Further, the NSW Monitoring Evaluation and Reporting Program monitors rocky reef biota, which includes sessile floral and faunal assemblages.

Fish communities have also been assessed on reefs in deeper water using baited remote underwater video systems. These data are used to not only examine changes between sanctuary and non-sanctuary areas through time, but also to further test the habitat surrogates that are used to examine the effectiveness of the current zoning arrangements in protecting a representative selection of biodiversity. In addition, baited underwater video surveys have recently commenced in several marine parks over soft-sediment habitats in order to examine the effectiveness of the current habitat classification of this substrate type.

#### **QUESTION**

Can you advise what role the presence – and the increased presence when fishing is banned from those areas – these fish play in the ecological processes within that no-take zone? (p. 28)

#### **ANSWER**

Pelagic fish move over more or less large distances and will frequently move in and out of sanctuary zones. While they reside in the sanctuary zone they may feed and thus prey on

species residing in the sanctuary zone. So, protecting predatory fish in sanctuary zones (by excluding fishing, for example) may lead to a reduction in the number of prey species in that area. That is not a bad thing in itself but part of restoring a healthy balance in the ecosystem protected in the sanctuary zone and conserving ecological processes as stipulated by the Act.

Additional background information: Pelagic ecosystems are an important component of the overall marine environment and impacts on many groups of species can have widespread influences on the broader community through flow-on effects on the food web. This particularly relates to impacts on top level predators, which are poorly understood, but may have significant flow-on impacts on the stability and community composition of both the pelagic and benthic components of the system.

Sanctuary zones that are of sufficient size and appropriate location can provide some protection to the more mobile species. Protection of important nursery areas for otherwise pelagic species can also improve overall protection of those species, and in NSW this includes many estuarine sanctuaries that include important seagrass beds.

Several studies have shown differences in the abundance and/or biomass in sanctuary zones compared to fished areas of fish species that range beyond the area of protection at stages in their life-history suggesting that some protection can occur for such species. However, as fish would not be fully protected, partial protection within reserves needs to be accompanied by conventional fisheries management control measures applied to all local populations.

Effective protection of key sites for many species is dependant on knowledge of the distribution of demersal and pelagic habitats, and temporal and spatial scales of movement. As a consequence the Marine Parks Authority, its partner agencies, and a number of external research institutions and universities are currently conducting a large number of projects examining the movement of key species and connectivity of marine protected areas in NSW.

## QUESTION

With regard to storm water and sewerage in marine parks, do all marine parks have sewerage management plans? Do stormwater outlets that discharge directly into sanctuary zones pose a threat to biodiversity and habitat? (p. 29)

## ANSWER

The management of stormwater and sewerage adjacent to marine parks is done by local councils and the Lord Howe Island Board. Stormwater outlets that discharge directly into sanctuary zones can pose a threat to biodiversity and habitat, with the level of threat dependent on the nature of the discharge, ameliorative measures and the receiving environment.

The Marine Parks Authority works with local councils on water quality matters, including the management of sewerage and stormwater outlets. For example, a high priority in the Operational Plan for Cape Byron Marine Park (<http://www.mpa.nsw.gov.au/pdf/Operational-Plan-Cape-Byron-Marine-Park.pdf>) is to 'Support and engage in the development and implementation of local management plans and programs initiated by the Byron and Ballina shire councils, and other government agencies' including a deliverable to address priorities for the Park by engaging with 'Byron and Ballina Shire LEPs, and the Standard Instrument, and Coastal and Stormwater Management Plans'.

The Marine Parks Authority is involved with the assessment of proposed developments that are within marine parks and that affect marine parks (sections 19 and 20 of the Marine Parks Act). For example, in 2010 the Authority worked on a proposed development at Woolli,

directly adjacent to the Solitary Islands Marine Park, and expressed concerns about impacts on the marine environment and Marine Park that were likely to result from the sewage treatment option proposed. Following negotiation, a modified proposal with improved sewage treatment and a net reduction in the discharge of pollutants for the entire proposed development was approved in mid 2010.

Sewage treatment improvements are occurring in coastal and regional NSW. Since the Country Towns Water Supply and Sewerage Program commenced a total of \$427 million has been provided to local councils to improve sewerage systems or provide sewerage to unsewered coastal areas.

Sewage treatment plant upgrades on the North Coast including those at Coffs Harbour/ Woolgoolga/ Moonee in 2009 associated with pollution reduction programs cost approximately \$150 million and have enabled Coffs Harbour City Council to eliminate discharges at two coastal lagoons, to increase reuse of higher quality effluent, and to undertake deep sea release of higher quality effluent.

Further, the Shoalhaven Reclaimed Water Management Scheme involved the \$48 million upgrade of four municipal sewage treatment plants located at St Georges Basin, Vincentia, Callala and Culburra and construction of a common distribution network to allow for the beneficial reuse of treated effluent for irrigation by a number of farmers located on the lower Shoalhaven River floodplain. This has significant decrease in the volume of treated effluent being directly discharged into Jervis Bay Marine Park.

#### **QUESTION**

Do the research findings you refer to differentiate between recreational and commercial fishing? (p. 30)

#### **ANSWER**

Typically the research in question examines marine protected areas in which all types of fishing are prohibited. However, some research has looked at changes in food webs largely as a result of commercial fishing activities. For example, in a paper published in the journal *Science* in 2007 (Myers et al., Vol. 315: 1846–1850), Myers and others showed that as abundances of all 11 species of great sharks that consume other elasmobranchs (rays, skates, and small sharks) fell over the past 35 years primarily due to commercial fishing (for shark meat and fins, and fishing bycatch of sharks), 12 of 14 of these prey species increased in coastal northwest Atlantic ecosystems. Effects of this community restructuring have cascaded downward from the now-abundant cownose ray, whose enhanced predation on bay scallops was sufficient to terminate a century-long scallop fishery.

In addition, there has been some research on marine protected areas that allow recreational fishing only (see answer to Question 10 below). This would include research into recreational fishing havens in NSW.

#### **Additional questions from Members and responses:**

Please note that responses to additional questions 1 to 9, 25, and 27 to 31 are being provided directly by Industry and Investment NSW.

#### ***National/International requirements for Marine Protected Areas***

10. With respect to our commitments to the National Representative System of Marine Protected Areas, is there a requirement for any of our Marine Parks to include sanctuary zones?

## ANSWER

Yes, the National Representative System of Marine Protected Areas (NRSMPA) requires 'highly protected areas' or sanctuary zones as they are called in NSW. The definition of these zones relates to definitions of the International Union for Conservation of Nature (IUCN) categories for the highest level of protection (see below).

The Guidelines for Establishing the NRSMPA (published in 1998) and the Strategic Plan of Action for the NRSMPA (published in 1999) were endorsed by Government ministers of the Australian and New Zealand Environment Conservation Council (ANZECC) and both documents state that marine protected areas in the NRSMPA:

- 'will aim to include some highly protected areas (IUCN Categories I and II) in each bioregion' – this is one of nine principles for development of the NRSMPA
- 'may incorporate areas ranging from highly protected areas to sustainable multiple use areas accommodating a wide spectrum of human activities'.

The sanctuary zones of NSW marine parks are typically classified under IUCN Category II (with habitat protection zones as Category IV and general use zones as Category IV).

Additional background information: The Australian Government and States increasingly use no take zones in marine protected areas. For example, a new zoning plan for the Great Barrier Reef Marine Park commenced in 2004. The proportion of the multiple-use marine park in 'no-take' zones increased from less than 5% to more than 33%, and now protects representative examples of each of the 70 mapped broad habitat types or bioregions.

The requirement for 'highly protected areas' is supported by research to date. From a synthesis of empirical studies on no-take and partially protected marine protected areas published in the journal *Marine Ecology Progress Series* in 2008 (Lester and Halpern, Vol. 367: 49-56) the authors concluded that while partially protected areas may confer some benefits over open access areas, no-take reserves generally show greater benefits and yield significantly higher densities of organisms within their boundaries relative to partially protected sites nearby.

11. Can seasonal and location-specific fishing closures be considered as Marine Protected Areas under the IUCN guidelines?

## ANSWER

Typically no, but it depends on the primary purpose of the closures in question and whether the areas meet the IUCN definition of a protected area.

The IUCN Guidelines for Applying Protected Area Management Categories, published in 2008, specify that to achieve formal recognition by the IUCN a marine protected area must be consistent with the definition of a protected area.

The IUCN definition of a protected area is: "A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values".

Sites where the primary purpose is extractive uses, e.g. closures made for fisheries management purposes, clearly fall outside this definition of protected areas. Many seasonal and location-specific fishing closures are made for fisheries management purposes in NSW, e.g. many closures to protect juvenile king prawns which support the prawn trawling industry in NSW. These closures are not considered to be marine



protected areas using IUCN Guidelines even though they may have some value for marine biodiversity.

Seasonal or temporary protection can help to conserve some species of fish and marine mammals that predictably use particular sites at certain times of the year for spawning, breeding or migrating. These sites may not need any greater management than surrounding areas at other times of the year. Seasonal or temporary protection of these sites could potentially be considered marine protected areas under the IUCN Guidelines. But the sites should be dedicated to 'the long-term conservation of nature' which would require a longer timeframe than an annual fishing closure. In NSW, seasonal arrangements in an aquatic reserve or marine park are alternatives.

Some grey nurse shark aggregation sites are seasonally protected in NSW marine parks using habitat protection zones that are closed to all or some types of fishing activities at certain times of the year (e.g. Julian Rocks in Cape Byron Marine Park and Montague Island in Batemans Marine Parks).

12. Given that all fishing activity within State waters are managed or open to management, it has been put to the Committee that the entire State waters could be proclaimed as a single Marine Park.

Could you comment on feasibility of this concept?

#### **ANSWER**

This question focuses on the management of fishing activity, which is not the primary objective of marine parks in NSW. The primary aim of marine parks in NSW is to conserve biodiversity and maintain ecological processes, rather than to manage fishing activity. A marine park covering all of NSW waters is not required to achieve this primary aim.

#### ***Scientific research on sanctuary zones***

13. When scientific studies from Australia and overseas report an increase in biomass for an area that has been declared a sanctuary or no-take zone, does biomass refer to all or the majority of marine species within the zone or to a standard set of species or to specific species depending on the research and report?

#### **ANSWER**

In general, biomass is estimated for species that are the focus of the specific monitoring program, and are generally restricted to fish and a few macro-invertebrates such as abalone and rock lobsters. Much of this is done through visual estimation of the length of individual animals using SCUBA or video surveys, with sizes converted to biomass using known length-weight relationships for each species. For ongoing monitoring programs, generally a standard suite of species will be analysed among zones and through time in order to ensure changes through protection are comparable.

For example, recent monitoring of shallow reefs within Lord Howe Island Marine Park examined changes in the biomass of fish between sanctuary and habitat protection zones over a number of years, with biomass providing information that is important for understanding ecological processes at the local scale.

14. In answers to questions on notice DECCW (p12) said with respect to researching the benefits of sanctuary zones that "...because of the complex food web within habitats such as rocky reefs, some species are likely to decrease due to the presence of more predators, and increases in numbers of some species may also be limited by the availability of food and competition."

Would these potential decreases in some species only ever be short-term or could they be permanent?

In assessing the benefit of a sanctuary zone does there need to be an overall net biodiversity increase for it to be assessed as beneficial or do you take the view that as it reflects an environment without human (fishing) intervention that it is a more natural outcome and therefore worthwhile?

#### **ANSWER**

Changes in the community composition of species inhabiting sanctuary zones are likely to persist as long as those sanctuary zones persist – albeit that all natural communities may change over time. This is all part of realising the aim of a sanctuary zone which is to conserve biodiversity (i.e. the complexity of species inhabiting the zone) and ecological balance (i.e. the interaction between species and the complex food webs).

The extent of the benefit from declaring sanctuary zones depends, among other things, on the extent of impact prior to protection. Thus areas that had limited or no prior impact are likely to change very little – the concept of protecting pristine or near-pristine areas – whereas those with significant prior impact are likely to change a lot.

It is important to remember that the goal is to create protected areas that are "comprehensive, adequate and representative" which is different from focussing exclusively on increasing biodiversity. So, yes, if the area meets these CAR criteria, and creates a more natural, representative ecosystem, then that would be a worthwhile outcome.

Additional background information: The relative abundance of many species in many sanctuary zones in a range of habitats are being monitored through time, but biological systems are variable and take time to respond following protection. Documenting differences between sanctuary zones and other areas may take many years following the establishment of a zoning plan, and such differences are likely to be species-specific. A number of studies have indicated a period of at least 10 to 25 years is required for the full benefits of sanctuary zones to develop for some reef fishes, invertebrates and macroalgal assemblages, which is mainly driven by the longevity, recruitment patterns and prey interactions of those species. However, because of the complex food web within habitats such as rocky reefs, some species are likely to decrease due to the presence of more and larger predators, and increases in numbers of some species may also be limited by the availability of food and competition.

The likely patterns of change in abundance and composition of the communities through time will be highly variable due to the complexity of the marine ecosystems, variations in the effectiveness of the zoning arrangements in restoring a natural community composition and potential climate changed induced impacts.

A key objective of sanctuary zones is to conserve a representative and adequate selection of marine biodiversity that results in maintaining, and in many cases, restoring ecological processes, including a healthy balance between predator and prey species. In some locations and habitats this may result in an overall decrease in biodiversity, but a more natural composition and size structure of key fish, macro-invertebrate and algal species. In most cases it is not practical or cost effective to



survey the complete suite of flora and fauna, a proportion of which are undescribed, particularly in deeper water on the continental shelf. It is common practice to monitor a selection of the biodiversity and changes in their relative abundance and size composition through time.

15. With regard to research on sanctuary zones in NSW Marine Parks, in answers to questions on notice DECCW advised: "It is typical of any research to measure and record data for a selection of species and locations, rather than every species and site of interest. While a large number of sanctuary zones would include research sample sites, it would neither be necessary or cost effective to study every single site to obtain scientifically useful information.

Can you advise what locations and species at those locations will be monitored in NSW Marine Parks?

**ANSWER**

The NSW marine parks research and monitoring program is detailed in the Strategic Research Framework 2010-2015 which guides research and monitoring in marine parks for the next five years. It will be used by state agencies to focus their research effort on the Authority's priority issues and to stimulate co-investment by research partners in the wider marine research community.

The monitoring in marine parks is nested within a broader state-wide monitoring, evaluation and reporting (MER) program which collects data on marine ecosystems, coastal lakes and estuaries, threatened species, native fauna, aquatic vegetation and pest and invasive species. All of these monitoring data are relevant to Marine Parks and provide baseline and trend data that allow assessments of the condition of marine resources and the pressures on them.

Specifically, the estuaries and coastal lakes MER theme that includes areas of marine parks has identified a set of indicators that are being assessed to determine the condition of these ecosystems and to examine trends in condition against the Government's natural resource targets. These indicators include measures of turbidity and concentration of chlorophyll a, and the extent of seagrass, mangroves and saltmarsh.

The marine MER theme includes a number of relevant indicators including the frequency of algal blooms, bacterial contamination of beaches, extent of marine protected areas and condition of rocky reef biota (which incorporates the work done by the Authority using Baited Remote Underwater Video (BRUV) to survey fish communities on rocky reefs. Over the long-term, it is envisaged that each park will need a strong baseline of data consisting of approximately three years of annual BRUV sampling. After this a break of several years is likely (in order to optimise budgetary considerations), with sampling commencing again for another block of three years. This sampling cycle should produce cost-effective data to assess the ecological changes associated with marine protection in NSW. At present several hundred locations are surveyed annually throughout the marine parks system, including a comprehensive BRUV program on reefs around Lord Howe Island.

Over time this project will help to research the effectiveness of marine parks, by monitoring changes in different types of zones within marine parks and areas outside of marine parks. Marine parks also use Underwater Visual Census (UVC) surveys for monitoring purposes. These surveys are done by SCUBA diving on shallow-water rocky reefs. UVC surveys have been done in all marine parks in NSW and comparisons with marine protected areas in temperate waters of other States can be done.

Research projects such as BRUV's and UVC's are carried out in sanctuary, habitat protection and general use zones to measure changes in species assemblages over time and monitor the relative condition and response of these zones to management. It is typical of any research to measure and record data for a selection of species and locations, rather than every species and site of interest. While a large number of sanctuary zones would include research sample sites, it would be neither necessary nor cost effective to study every single site to obtain scientifically useful information.

Other MER themes include measures of threatened species such as grey nurse sharks and invasive species such as the macroalga *Caulerpa*. These indicators are being used to assess the condition of marine and estuarine ecosystems, including those within marine parks. The Authority has partnerships with many research organisations, State agencies, academic institutions and community groups to address those issues. Some of these, indeed, comprise statutory obligations of state agencies other than the Marine Parks Authority.

Overall, we have an ever increasing database of marine monitoring data which has greatly improved our understanding of the marine environment and is supporting our management of marine parks.

16. The Committee was advised that with the rezoning of the Jervis Bay Marine Park, it is proposed that the St Georges-Steamers Head Sanctuary Zone would be relocated northwards.

Is the Department in a position to monitor and compare the changes in biodiversity of the old and the new sanctuary zones?

**ANSWER**

The Department is in a position to assess changes in biological diversity in the areas where changes to sanctuary zones are proposed. Two recently commenced research programs involve sampling the reefs in these areas for fish, invertebrates and macroalgae using diver and remote video surveys. These programs are designed to assess the general long-term changes in biological diversity associated with marine park management. They cover a representative range of sanctuary zones and habitat protection zones across the marine park (and also include sampling external reference locations). Sampling has been specifically focused on the areas between St Georges Head and Steamers Head and between Steamers Head and Moes Rock due to the proposed changes to the zoning plan in these areas. To date, one round of annual sampling has been completed.

17. In answers to questions on notice DECCW noted (p11) "that the development of barren reef areas due to the over-grazing of macro-algae by sea urchins can result, in part, from the reduction in the number of urchin predators due to fishing."

What species of fish predate on sea urchins?

**ANSWER**

There is limited information on the trophic structure of rocky reef communities in NSW, although there is an increasing body of evidence from other temperate reef systems with similar composition that urchins may be eaten by a number of reef fish species, particularly when the predators are large. In New Zealand, snapper, a key recreational and commercial fishing species, appears to strongly regulate sea urchin populations (Shears and Babcock 2002, Shears et al. 2008). Recent research from Tasmania indicates that rock lobster are one of the key predators of sea urchins (Pederson and Johnson 2006), with large lobsters being the main part of the

population eating urchins. Research in the temperate waters of New Zealand has shown that increases in large snapper and lobsters are associated with declines in sea urchins and changes to kelp ecosystems on rocky reefs (see answer to Question 10 above).

Further research is needed to determine which predators eat sea urchins on rocky reefs throughout NSW and whether reef communities with higher abundance of such predators correspond to lower abundance of sea urchins. Long-term monitoring will also be required to examine the changes in sea urchin numbers and abundance of macroalgae.

The Marine Parks Authority has recently completed a review of scientific information on macroalgal dominated rocky reefs in NSW. This review has been provided as background material for a scientific workshop of key researchers to be held in November. A key objective of this workshop is to outline current and potential projects that aim to examine issues of patterns and processes on shallow macroalgal reefs in NSW. The Marine Parks Authority also has research underway looking at top down control of kelp beds and the role of predation in kelp bed and urchin barren dynamics using study sites inside and outside of sanctuary zones.

#### ***Independent review of Marine Park Science in NSW***

18. Recommendation 11 was "Clarify marine biodiversity for the wider public of NSW, focussing upon concepts, values and examples, rather than a focus upon any arguable spin-offs for fishing."

Are you able to advise us on how this will be done?

#### **ANSWER**

This task will be done by updating the marine parks website ([www.mpa.nsw.gov.au](http://www.mpa.nsw.gov.au)), by continuing to publish reports on the natural values of marine parks (currently available for Jervis Bay, Solitary Islands and Lord Howe Island marine parks at <http://www.mpa.nsw.gov.au/review/JBMP-natural-values.pdf>, <http://www.mpa.nsw.gov.au/review/SIMP-natural-values.pdf> and <http://mpa.nsw.gov.au/pdf/Natural-Values.pdf> respectively), by continuing to emphasise the role of marine parks in biodiversity conservation in other publications (e.g. park user guides and zoning plan reviews), by refining Discovery program activities based on marine parks, by continuing to engage community groups in marine park activities, by continuing to develop education materials for marine parks (e.g. schools education kit for NSW marine parks launched on 20 August 2010, available for each marine park, e.g. Batemans Marine Park [http://mpa.nsw.gov.au/batemans\\_kit.html](http://mpa.nsw.gov.au/batemans_kit.html)) and by developing other opportunities for community engagement such as workshops with tourism operators, community groups and marine scientists at local marine parks.

19. Recommendation 8 was "Review the utility of the zonation, in particular what is gained by having sanctuary zones in ocean beach and estuarine habitats."

In light of this is there any move towards allowing a 100 metre from-shore buffer zone on beach sanctuary zones while this review takes place?

#### **ANSWER**

Zoning Plans do undergo periodic review and this issue will be addressed during those reviews.

There is currently no intention to allow such a buffer zone.

Less than 4 percent of the NSW coastline including ocean beaches and rocky shores are set aside in sanctuary zones. Zoning plans typically provide many opportunities for beach fishing, with extensive habitat protection zones and/or general use zones in each park and sanctuary zones 'offset' from beaches in several marine parks. The utility of zonation is reviewed periodically through zoning plan reviews.

20. Page 9 of the review posed the question of what is the plan for the use of the Baited Underwater Video System (BRUVS) in measuring fish abundance etc, and how would it explicitly link in with zoning reviews.

What are the plans for making use of BRUVS?

**ANSWER**

Currently, each NSW marine park is working on a co-ordinated state-wide research program using Baited Remote Underwater Video (BRUV). This research program is specifically targeting predatory fish (i.e. as bait are used), but may also be used to assess potential indirect effects on invertebrates. A baited technique is used as it enables large amounts of data (i.e. observations or counts of fishes) to be collected within a relatively short period of time (e.g. 30 minutes).

NSW marine parks' state-wide BRUV program is based on a substantial background data collected in several of the marine parks. It involves a robust and well replicated sampling design that involves sampling at least four sanctuary zones and four non-sanctuary zones within each NSW marine park and at least two locations outside each park. This sampling design should provide a substantial assessment of the general state-wide effects of marine park protection and should provide excellent guidance for the management of NSW marine parks.

21. Page 11 point b says that a key gap in knowledge where ongoing research is required is "evaluation of the role of zonation in the performance of the MPA against stated objectives in terms of biodiversity conservation, spillover benefits, and community benefits.

Can you advise if there a set of stated objectives for sanctuary zones, and if so, what are they?

**ANSWER**

Yes, the objects of sanctuary zones are set out in the Marine Parks (Zoning Plans) Regulation 1999 (clause 1.7).

The objects of sanctuary zones are:

- (a) to provide the highest level of protection for biological diversity, habitat, ecological processes, natural features and cultural features (both Aboriginal and non-Aboriginal) in the zone, and
- (b) where consistent with paragraph (a), to provide opportunities for the following activities in the zone:
  - (i) recreational, educational and other activities that do not involve harming any animal or plant or causing any damage to or interference with natural or cultural features or any habitat,
  - (ii) scientific research.



22. Is it your intention to publish on either the DECCW or MPA website the results of research on sanctuary zones?

**ANSWER**

Research studies are typically published in peer-reviewed journals and/or summarised on the marine parks website and this will continue (e.g. habitat mapping report [www.mpa.nsw.gov.au/pdf/Research-summary-report.pdf](http://www.mpa.nsw.gov.au/pdf/Research-summary-report.pdf), Lord Howe Island Marine Park Summary of Research and Monitoring [www.mpa.nsw.gov.au/pdf/Summary-Research.pdf](http://www.mpa.nsw.gov.au/pdf/Summary-Research.pdf), and research project summaries 2002–2009 for Jervis Bay and Solitary Islands marine parks <http://www.mpa.nsw.gov.au/pdf/Research-summary-report.pdf>).

23. At page 11 the review said that "While tourism and recreational activities were encouraged in MPAs and seen by many as being non-extractive and consistent with marine park values, it was recognised that they too may significantly impact local biodiversity, especially where they focus human activity in particular locations."

Are you aware of any locations within Marine Parks where this may be the case? And will research on this potential threat be undertaken?

**ANSWER**

There are a number of specific tourism and recreation activities that have been identified as having the potential to impact on marine park values currently or in the future. Ensuring recreation and tourism activities within NSW marine parks are sustainable is an ongoing core research issue, and covers a wide range of projects.

For example, a large dolphin-watching industry is present in the Port Stephens–Great Lakes and Jervis Bay marine parks and research is essential to evaluate potential long-term impacts by assessing the status of the dolphin population, and promoting long-term management by measuring the effects of management controls. There are also ongoing issues relating to the potential effect of high levels of SCUBA diving activities on reef systems, and it is important that this is assessed in order to minimise long-term impacts. Other examples of relevant key research projects include:

- assessment of impacts from vehicles to sandy beach macrofauna
- interactions between dolphins and kayak tours
- reducing the incidental bycatch of Galapagos sharks at Lord Howe Island.

NSW Maritime also undertakes many activities to reduce and regulate marine pollution, particularly marine debris related to fishing and vessel traffic.

Specific research projects have been conducted in recent years to examine these issues. In many cases projects are conducted by external research providers, with the Marine Parks Authority collaborating as a partner on projects that are often funded by the Australian Research Council.

Examples of relevant research projects include:

- assessing patterns of litter distribution and intensity on subtidal reefs associated with land-based fishing
- impacts of vessel anchoring on soft coral and sponge habitats
- impacts of seagrass friendly moorings on seagrass.

### **Connectivity of Marine Parks**

24. The answers to questions provided by the Batemans Marine Park Authority said (p2)  
"A recent genetic study on habitat-forming kelp and other algae has shown that connectivity both within and among NSW marine parks is generally high, indicating that current marine park design will facilitate connectivity of these ecologically important species. This research will be written up for publication."

Can you describe the importance of connectivity between Marine Parks and how it is achieved? A number of inquiry participants have called for greater physical connectivity between Marine Parks and on this basis argue for a new Marine Park in the Hawkesbury bio-region – is connectivity threatened by not having a park in this bio-region?

#### **ANSWER**

Knowledge of the scales over which marine organisms disperse and the rate of exchange of individuals among populations (population connectivity) is essential for understanding population dynamics, *predicting and monitoring impacts* (e.g. fishing, climate change), and implementing successful conservation and management strategies. For example, the overall benefits of marine protected areas are influenced by the mobility of adults and the distances over which offspring disperse, relative to the size, location and spacing of protection. While there are many papers which discuss the role of connectivity in this context, it is generally conceded that empirical data are poor for most marine species.

The scale of connectivity differs between different species and their various life-history stages. It is also strongly influenced by the distribution of their preferred habitat and presence of that habitat. Marine parks work most effectively for species whose scale of movement is similar to that of the zones that provide protection. In general, the majority of fish species of commercial and recreational interest settle and remain as juveniles in estuaries and shallow embayments, many preferring mangrove and seagrass habitats in these shallow areas. They then become more widely distributed as adults, in some cases moving from seagrass to rocky reef habitats.

Specific movement studies have generally focused on the post-settlement dispersal of fishes or movement of adult sharks using artificial tags. It has been shown that some species are site attached with movement restricted to hundreds of metres in (e.g. red morwong). In contrast, other species are capable of travelling hundreds of kilometres along the coast, among reefs and estuaries, or between reef and non-reef habitats (e.g. luderick, yellow-fin bream). There may be variations in movement on a daily and seasonal basis and also based on the developmental stage of the species involved. For example, red morwong may move from shallow water to deeper areas of reef and blue groper from estuaries to coastal reefs as they increase in size.

Establishing and maintaining connectivity between protected populations will become increasingly important as conditions in the marine environment are modified due to climate change induced effects. Identified increases in the dominance of tropical currents may result in shifts in species south, and therefore having marine protected areas along the section of coast between Port Stephens and Jervis Bay marine parks (a distance of about 260 km) would provide additional protection to those species. It is likely that most species that move over distances smaller than this would have reduced connectivity between marine parks if no protection is provided within the Hawkesbury Bioregion.

***Percentage of marine park coastline that is within national park***

26. We were advised that 40% of the NSW coast is contained within terrestrial National Parks. While approximately 30% of the coast is within Marine Parks. What percentage of Marine Park coastline is also within a National Park?

**ANSWER**

Approximately 58% of the marine park ocean coastline for mainland NSW is also within a national park (this figure does not include Lord Howe Island nor estuary shorelines).

***Carrying of spearguns in National Parks***

32. Can you please outline the regulations/restrictions that apply to the carrying of spearguns through NSW National Parks?

**ANSWER**

The carrying of spearguns in national parks is governed by clause 20 of the National Parks and Wildlife Regulation 2009, the relevant provisions of which are:

- (1) A person must not in a park:

- (b) carry or discharge or have in the person's possession any airgun, speargun or other lethal weapon

Maximum penalty: 30 penalty units.

- (2) A person does not commit an offence under this clause for anything done or omitted with the consent of a park authority and in accordance with any conditions to which the consent is subject.

- (6) A person does not commit an offence under subclause (1) (b) if the person carries or possesses an unloaded speargun in a park, unless a plan of management for a park or a notice erected in the park or given to the person prohibits the carrying or possession of a speargun (whether loaded or unloaded) in a park or any part of the park.

- (8) In this clause, unloaded speargun means:

- (a) an assembled rubber powered speargun that does not have the shaft engaged in the trigger mechanism and the rubbers stretched and engaged in the shaft, or  
(b) in the case of a pneumatic, spring or gas powered speargun—one that does not have the spear shaft located within the barrel of the speargun, or  
(c) a disassembled speargun.

In summary, spearguns may be taken into national parks if:

- the speargun is unloaded, unless a plan of management or notice erected in the park or given to the person prohibits the activity, or
- the speargun is loaded and the person has the consent of the park authority.

Regulatory provisions concerning the carrying of spearguns in national parks drew very little comment when the National Parks Regulation 2002 was reviewed and remade, with public consultation, in 2009. At the request of spearfishers, the draft 2009 regulation contained an amendment clarifying that an 'unloaded speargun' also meant 'disassembled speargun'. This provision now forms part of the current regulation.



**Swivel clips in sanctuary zones**

33. Can you please outline the regulations/restrictions that apply to the carriage/storage of swivel clips when transiting through sanctuary zones?

**ANSWER**

Similar questions have been raised and responded to at previous hearings and through questions on notice.

Clip swivels are used to attach fishing lures or rigs to the main fishing line. They are used when lures and rigs need to be changed quickly and easily.

Regulations on the possession of fishing gear is contained in clause 1.25 of the Marine Parks (Zoning Plans) Regulation 1999. In outline, fishers may transit through any sanctuary zone (i.e. travelling from one place where the fishing gear can be legally used to another place the gear can be legally used) with fishing rods 'fully rigged' including with clip swivels, provided no part of the line is immersed in the water and no hook is baited.

When anchored, moored or aground in a sanctuary zone all tackle, including clip swivels, must be removed from a rod, leaving only a bare line on the reel.

# NSW MARINE PARKS AUTHORITY

## COMPLIANCE REPORT 2009/2010

### INTRODUCTION

The MPA Marine Parks Compliance Report 2009/10 summarises all enforcement actions by marine parks (DECCW) staff in NSW Marine Parks (excluding Lord Howe Island Marine Park) and is an important output required by the MPA State Compliance Plan and Policy.

In 2009 the MPA endorsed a four year compliance strategy consistent with the policy objective of achieving 'optimal compliance'. The strategy aims to improve public support for aquatic conservation and include the views of the community in marine park management, which in turn has the capacity to significantly influence compliance in marine parks. To this end, the Authority's endorsed a Communications and Community Engagement Strategy 2009 - 2012 which provides the framework for a state-wide focus on communications and seeks to engage the community to take action towards conserving marine biodiversity.

Improving relationships between government agencies, commercial sectors, fishing interests and communities are essential in order to work collaboratively and co-operatively to achieve marine park goals. The Authority's vision is to establish a management system that encourages a culture of voluntary compliance, ensuring that regulatory requirements are understood and supported by the community.

The strategy aims to achieve optimal compliance in NSW marine parks by:

1. maximising voluntary compliance in marine parks;
2. creating an effective deterrent against illegal activities; and
3. measuring, reviewing and improving compliance operations (adaptive feedback)

As a framework for compliance planning, the Authority has identified six thematic areas where compliance activity is warranted these include: 1) Conservation of biodiversity; 2) Fisheries management; 3) Coastal development; 4) Water quality; 5) Tourism and recreation; and 6) Incidental activities.

Part 1 of this report summarises the MPA compliance work plan outcomes for 2009/10 and enforcement information from all marine parks. It also includes information about offender age classes and a summary of litigation actions referred to DECCW legal branch and litigation outcomes for the year. Part 2 provides detailed compliance information for each marine park, and includes enforcement actions by patrol effort, visitor and local offender composition, and mapped enforcement action 'hot spot' information. Analyses in this Report have been generated from data collected by DECCW marine park staff and entered on to the I&I NSW Nautilus Database under agreement between MPA partner agencies.

Enforcement effort information is a critical component necessary to standardise (normalise) enforcement action data for assessing compliance strategies, with the aim of identifying trends over time. Trends in enforcement action and voluntary compliance outcomes cannot be analysed or compared in a meaningful way without this effort information. In order to compare compliance trends across marine parks it is also necessary that methodology for applying enforcement actions and the methodology for calculating and reporting effort is standardised and consistently applied. To achieve this aim operating guidelines were prepared to assist staff in calculating and recording effort data, and the Nautilus database was modified for marine park use accordingly.

In 2009/2010 the MPA also developed supplementary enforcement guidelines to clarify and standardise officer discretion for enforcement actions in marine parks sanctuary zones. A key element of these guidelines ensures that all users in any marine park, regardless of mitigating factors, will be issued a written caution (as a minimum) for violating sanctuary zone offences. In most cases, the MPA guidelines support the issuing of penalty notices in the first instance for such offences.

## **PART 1 – SUMMARY OF MARINE PARK WORKPLAN AND ENFORCEMENT ACTIONS.**

The endorsed MPA compliance work plan for 2009/10 included actions to support the objectives of maximising voluntary compliance and creating an effective deterrence (see Appendix 1). Major achievements in 2009/10 included:

- Review and adoption of a new operational agreement between the MPA and NSW Maritime;
- Joint workshop to develop compliance plans and enforcement guidelines;
- Annual risk-based compliance planning introduced for 2010/11;
- Enforcement guidelines approved and implemented for marine park sanctuary offences;
- Education school kit released.
- Upgrading Nautilus database for marine park effort analysis.

In total, 1200 enforcement actions were issued by DECCW officers in NSW marine parks under Marine Park and Fisheries legislation in 2009/10. This total consisted of:

- 774 Marine Park legislative enforcement actions<sup>1</sup> (excluding verbal cautions and those pending), including: 579 written cautions, 181 infringement notices and 14 prosecutions (Figure 1); and
- 426 Fisheries Management legislative enforcement actions, including: 247 written cautions, 162 infringement notices and 17 prosecutions (Figure 2). (Under the MPA compliance agreement, prosecutions for FMA offences are administered by I&I NSW).

Seasonal variation in enforcement actions was highlighted with the majority of enforcement actions occurring in summer during December and January, and the least number of offences were observed in winter.

Combined enforcement actions for all marine parks for the 2009/10 year decreased by approximately 9% on the previous year (1317 cf. 1200). This decrease was uniform across both MPA and FMA legislation. At this time, however, it is not possible to determine if this decrease was associated with reduced patrol effort, as effort was not recorded in the previous year. Likewise, it is not possible to conclude that this reduction in enforcement actions represents an improvement in voluntary compliance. Decreasing trends in the number of enforcement actions over time with constant or increasing effort is key indicator that compliance strategies are effective. Accordingly this observation is a good sign (Figure 3).

In total, 41 offences were referred to DECCW legal for investigation in 2009/2010. Of these 70% (n = 28) were court elections, and over 50% of offences referred were associated with illegal fishing in a sanctuary zone. Of particular note, approximately one-third of court elections were discontinued as a consequence of additional DECCW legal advice that offered the defendant a second chance of paying the penalty notice. 14 individuals (20 charges) were prosecuted by DECCW in local courts for marine park related offences, and a 100% conviction success rate was recorded (this included one Section 10 outcome) and resulted in total court fines of \$16,250 (see Appendix 1).

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<sup>1</sup> 'Enforcement Actions' include written cautions, penalty notices and prosecutions actions.

Analysis of marine park enforcement data on offender age indicates that there is no significant difference in the frequency of enforcement actions across the 20 to 50 year old range. There are fewer offenders over the age of 50, which is likely to be due to the lower frequency of this age group undertaking activities in marine parks (Figure 4). Of particular interest is the frequency of enforcement actions associated with the 20-30 year age class compared to other age classes. In the previous year (2008/09) the 30-40 age class was the highest contributing age class; however, in 2009/10 the relative percentage of 20-30 year old offenders increased. Given that marine parks have been established for over 10 years in NSW it might be expected that this age group would be more aware of marine parks and be more likely to voluntarily comply with marine park laws compared to older age classes. Targeted education and engagement efforts at the 20-30 age group may be warranted in the future.

Figure 1 – Total Marine Parks Act and Regulations enforcement actions for marine parks by month 2009/10.

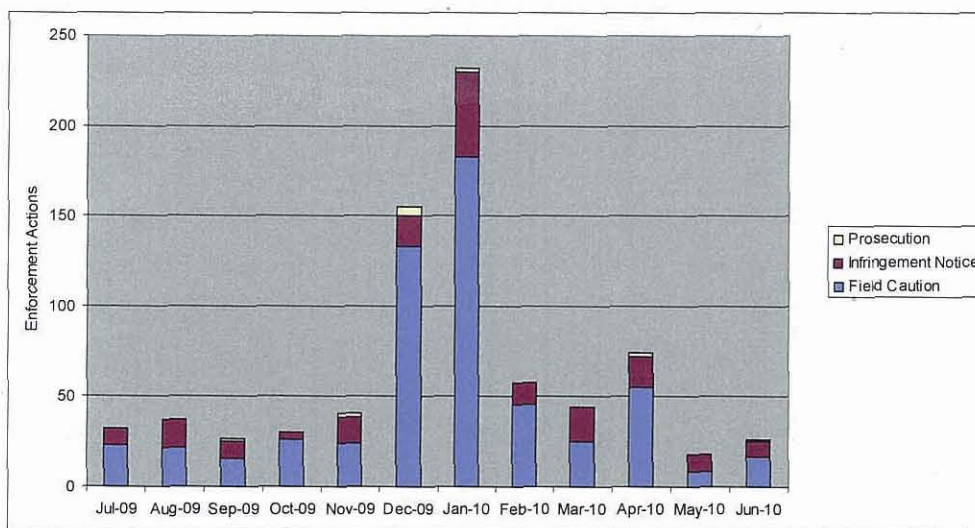


Figure 2 – Total Fisheries Management Act and Regulations enforcement actions for marine parks by month 2009/10.

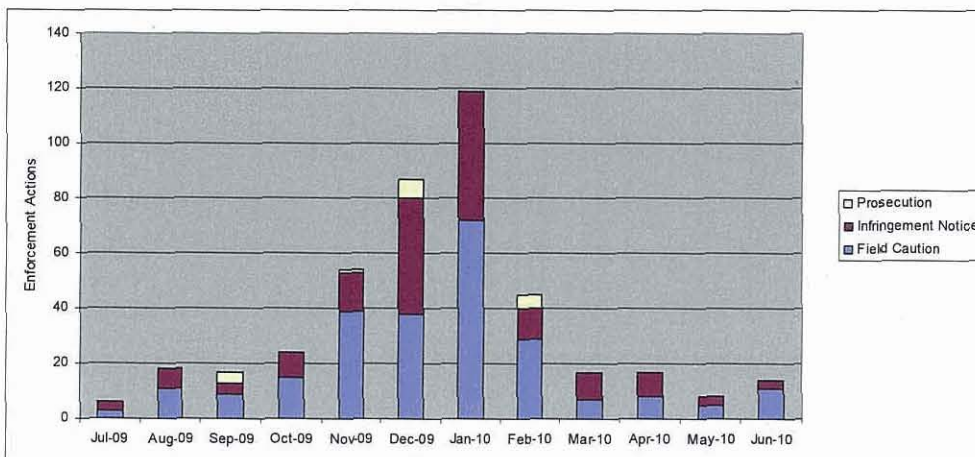


Figure 3 - Comparison of total enforcement actions for NSW Marine Parks for 2008/9 and 2009/10 financial year.

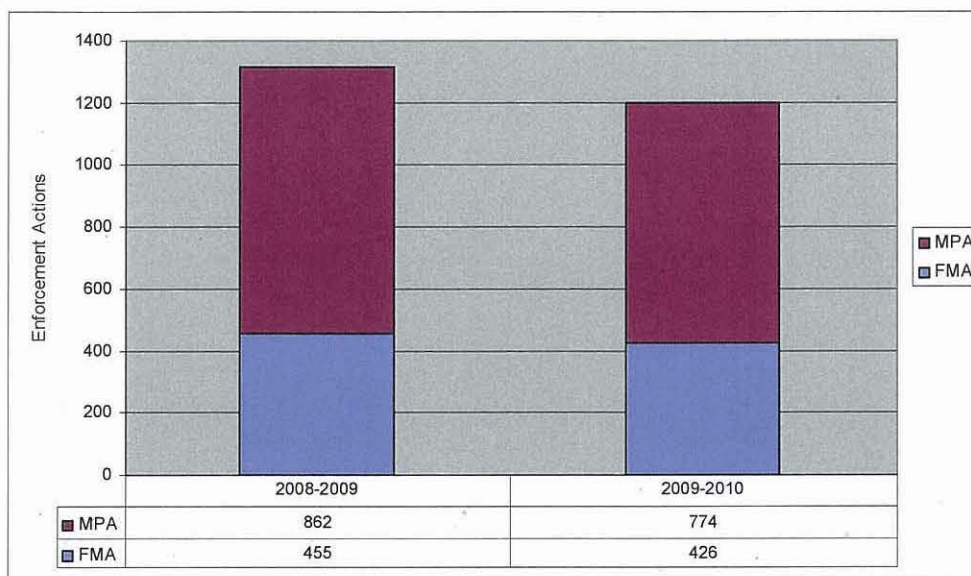
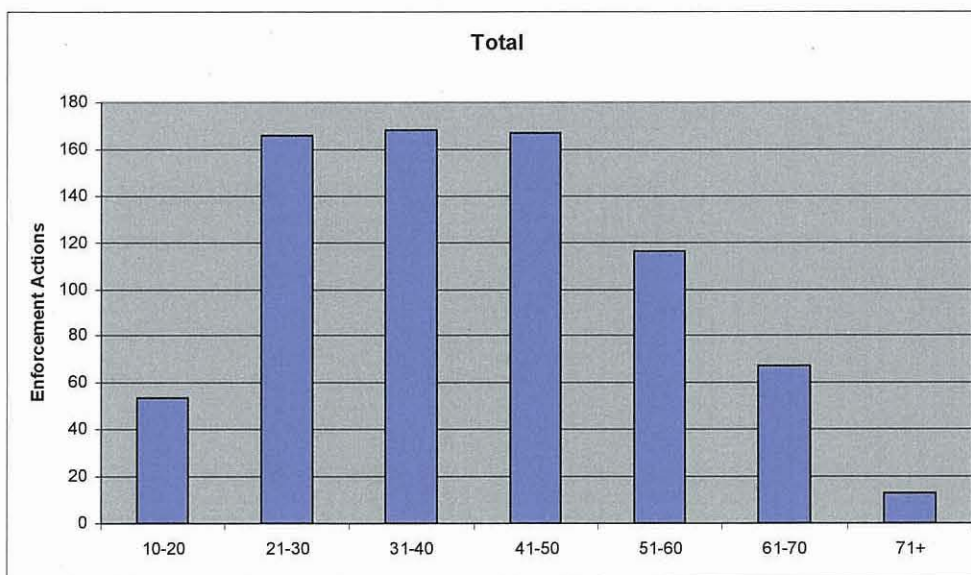


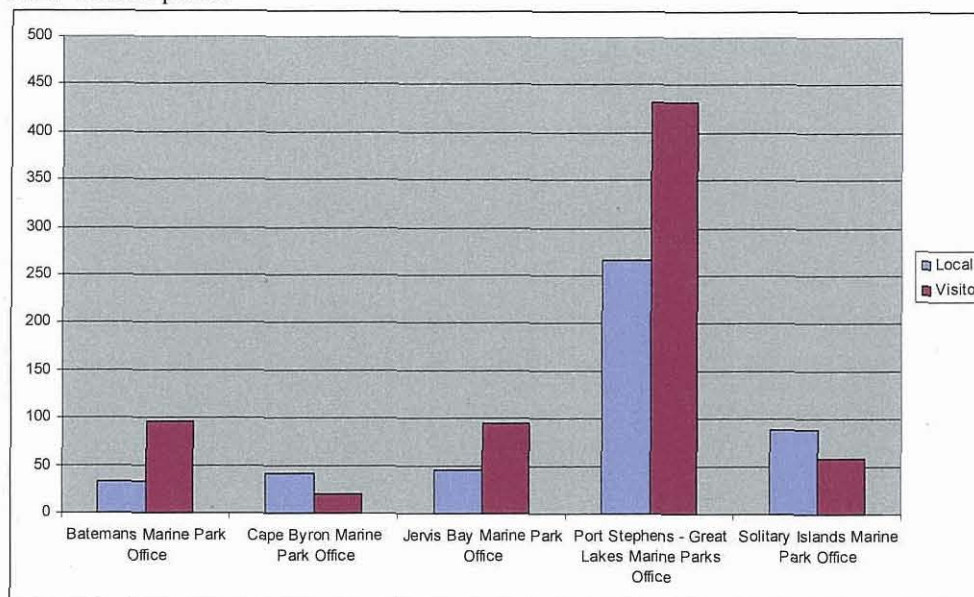
Figure 4 – Total Marine Park Act and Regulation enforcement actions for marine parks for by age class 2009/10.



Information about local and visitor compliance rates is important to identify trends over time in local community voluntary compliance. Marine Park Operational Plans also require this information as part of performance reporting, with an aim to achieve a reduction in the number of enforcement actions by local community citizens over the course of the operational plan. Operational plans define the local community of a marine park as residents in a local government area (post code) within a buffer of 40 km from a boundary of an adjacent marine park. It follows that marine park users that live beyond this buffer post code are classed as visitors. Figure 5 provides a summary Marine Park legislative actions by local and visitor offenders. Higher percentages of visitors to local offenders were reported in Batemans Marine Park (BMP), Jervis Bay Marine Park (JBMP) and Port Stephens – Great Lakes Marine Park (PSGLMP). More local offenders compared to visitors were reported in Cape Byron Marine Park (CBMP) and the Solitary Islands Marine Park (SIMP).



Figure 5 – Comparison of local and visitor Marine Park legislative enforcement actions for NSW marine parks.



Combined enforcement actions show that most offences reported by marine park staff were associated with illegal fishing in sanctuary zones (52% cf. 61% in 2008/9). Other notable offences were recreational fishing fee offences (22% cf. 23% in 2008/9), and catch size limits (6%). In comparison to last financial year there was no change in the top ranked five offences (Table 1).

Table 1 - Top Offences by percentage frequency observed in NSW Marine Parks 2009/2010

Offence	%
Harm/attempt to harm animal in sanctuary zone (Clause 7(1a) MPR1999) and Contravene management regulations that is designated a serious offence, (MPA 1997 Section 17A).	52%
Recreational fisher fail to have official receipt in possession (Section 34J(2), FMA1994) and Recreational fisher fails to pay fishing fee (Section 34J1), FMA1994)	22%
Possess prohibited size fish, (Section 16(1), FMA1994)	6%
Take/attempt to take fish in habitat protection zone in contravention of zoning plan, (Clause 12(2b), MPR1999)	3%
Unlawfully use net or trap for taking fish (Section 24(1), FMA1994)	3%
Take/attempt to take fish in contravention of zoning plan (Clause 1.17(2b), MP(ZP)R1999)	2%

## PART 2 – SUMMARY OF INDIVIDUAL MARINE PARK ENFORCEMENT ACTIONS

### 1. Cape Byron Marine Park (CBMP)

In 2009/10 CBMP staff reported a total of 62 enforcement actions, comprising 41 marine park legislative enforcement actions including, 10 written cautions, 30 infringement notices and 1 prosecution (Figure 6); and 28 fisheries offences including, 16 written cautions and 12 infringement notices (Figure 7).

Combined enforcement actions by month show little seasonal influence in CBMP. Most offences were recorded in October and January (Figure 8).

Figure 6 - Marine Park legislation enforcement actions in CBMP by month 2009/2010.

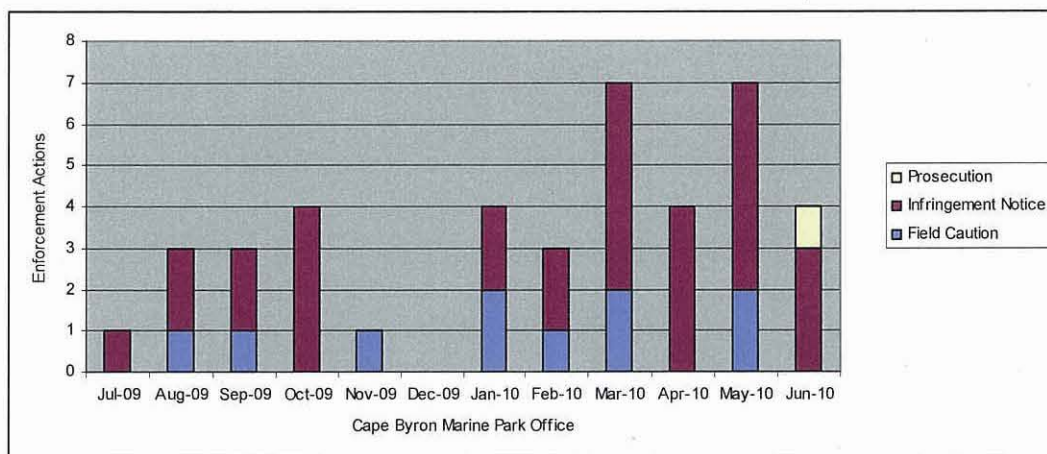


Figure 7 - Fisheries Management legislation enforcement actions in CBMP by month.

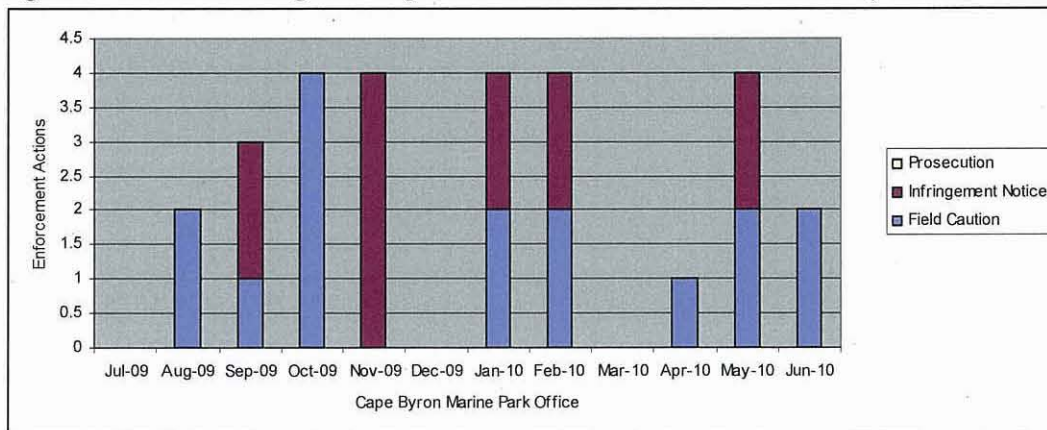
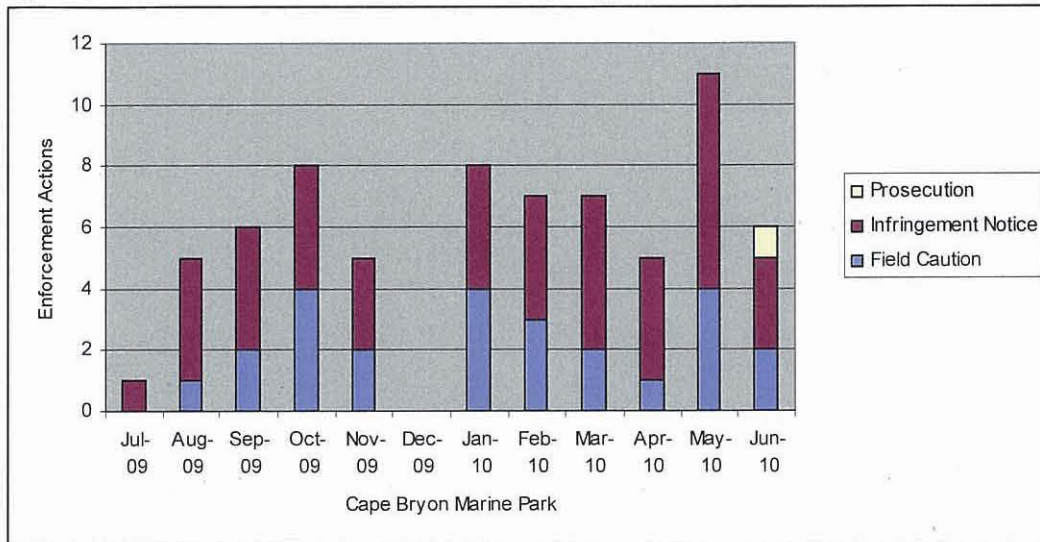


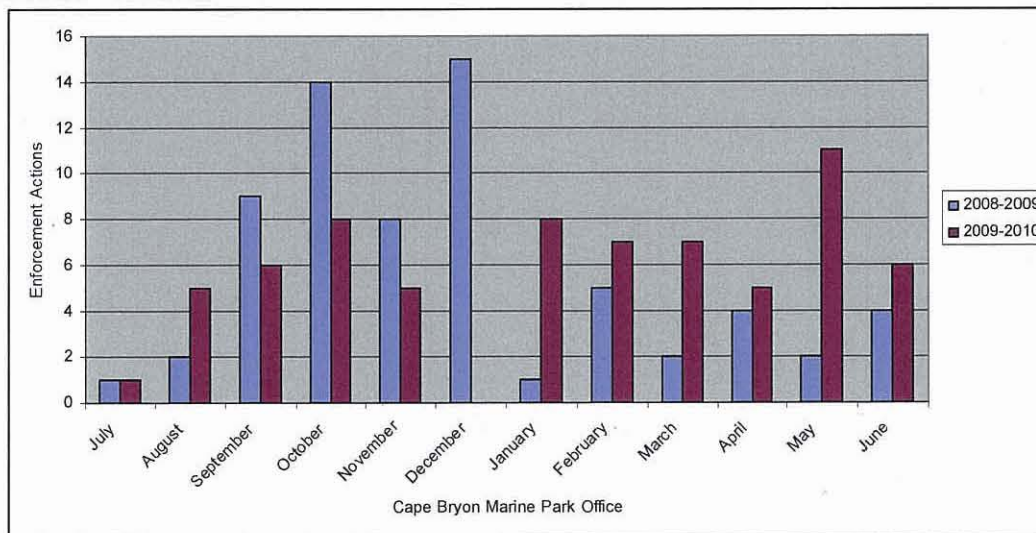


Figure 8 - Combined enforcement actions in CBMP by month 2009/2010.



In comparison to 2008/9, CBMP actioned fewer offences in October and December in 2009/10, however, more actions were reported in March and May 2009/10 (Figure 9). The decline in enforcement actions in December 2009/10 was most likely attributed to reduced effort at this time. Likewise, the increase in number of enforcement actions in May is likely to be due to an increase effort. As standardised reporting has only recently commenced there is no clear understanding of monthly enforcement action trends in CBMP at this time. However, with improvements in standardised reporting of effort, introduction of discretion and enforcement guidelines, risk-based compliance planning and targeted patrols, it is anticipated that trends over time will more accurately reflect local community responses to compliance strategies.

Figure 9 - Comparison of Marine Park Legislation Enforcement Actions in CBMP for 2008/09 - 2009/10.



In 2009/10 individual marine parks commenced reporting patrol effort data for the first time. The MPA uses this information to examine trends over time for combined marine parks as well as for each marine park, and to gauge delivery and effectiveness of the state-wide compliance plan. At the park level this information can be used in conjunction with compliance planning to optimise patrol effort and resource allocation over time. Also, given

that effort data is recorded by location (each park as identified unique spatial sectors for effort reporting), it can be used by park management to adjust and optimise compliance effort across the entire park.

In 2009/10 total enforcement actions by officer patrol hours for CBMP was 0.06. As most patrols include two officers the actual patrol rate is approximately double this value (i.e., 0.12) which is equivalent to one enforcement action every 8.3 hours on patrol. Over the year this CBMP enforcement/ effort rate ranged from 0.02 in November to 0.15 in March.

Table 2 - CBMP Marine Park legislation Enforcement Actions by Patrol Effort (person hrs) by Month in 2009/10.

Cape Byron Marine Park 2009/2010			
Mon Year	Actions	Hours	EA/ person hrs
Jul-09	1	16	0.06
Aug-09	3	40	0.08
Sep-09	3	73	0.04
Oct-09	4	67	0.06
Nov-09	1	63	0.02
Dec-09		71	0.00
Jan-10	4	115.5	0.03
Feb-10	3	76	0.04
Mar-10	7	47	0.15
Apr-10	4	37	0.11
May-10	6	58	0.10
Jun-10	3	21	0.14
<b>Total</b>	<b>41</b>	<b>684.5</b>	<b>0.06</b>

In 2009/10 the majority of enforcement actions reported in CBMP were committed by local users (68%). Similar to the combined dataset for all marine parks, in CBMP most violations were also committed by the 20-30 age class (Figure 10 and 11).

Figure 10 – Comparison of visitor to local user enforcement actions (MPA and FMA) in CBMP in 2009/10

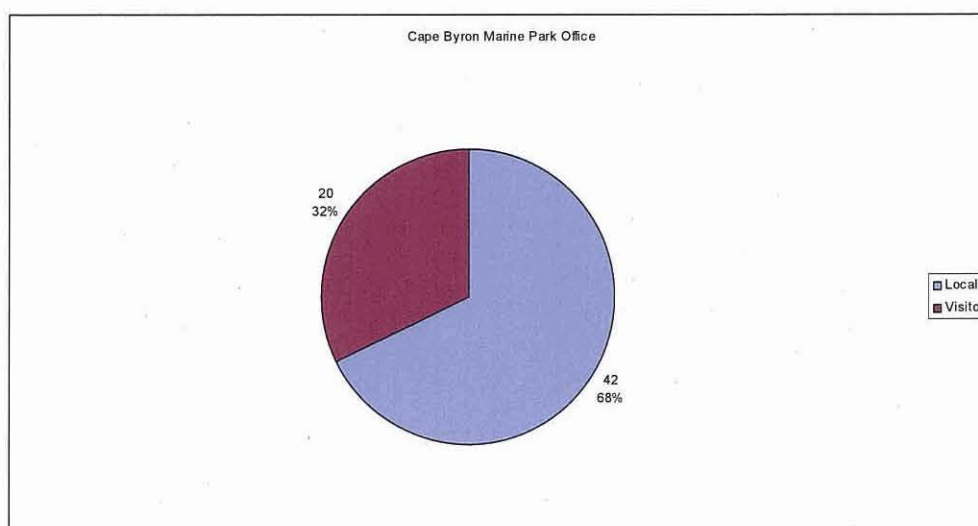
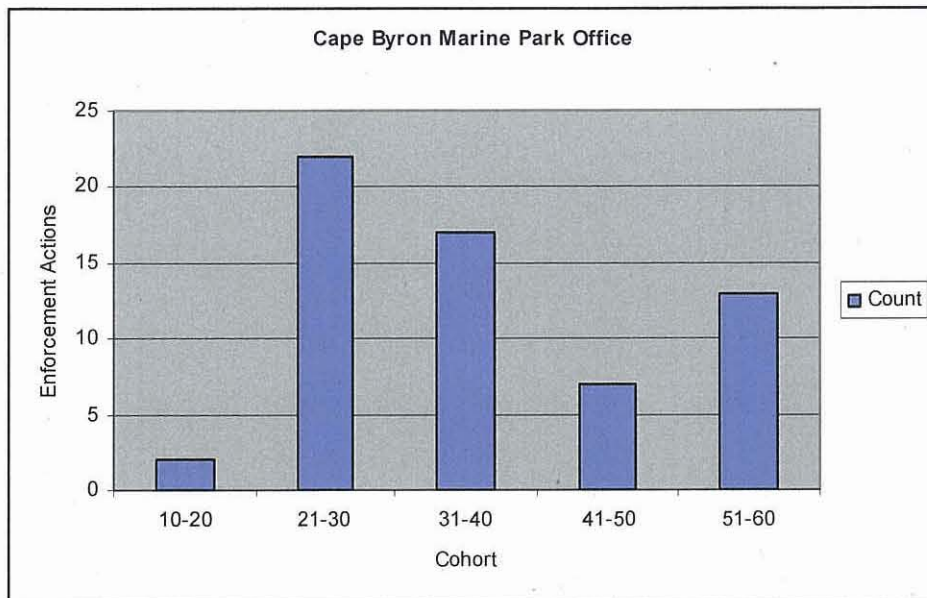


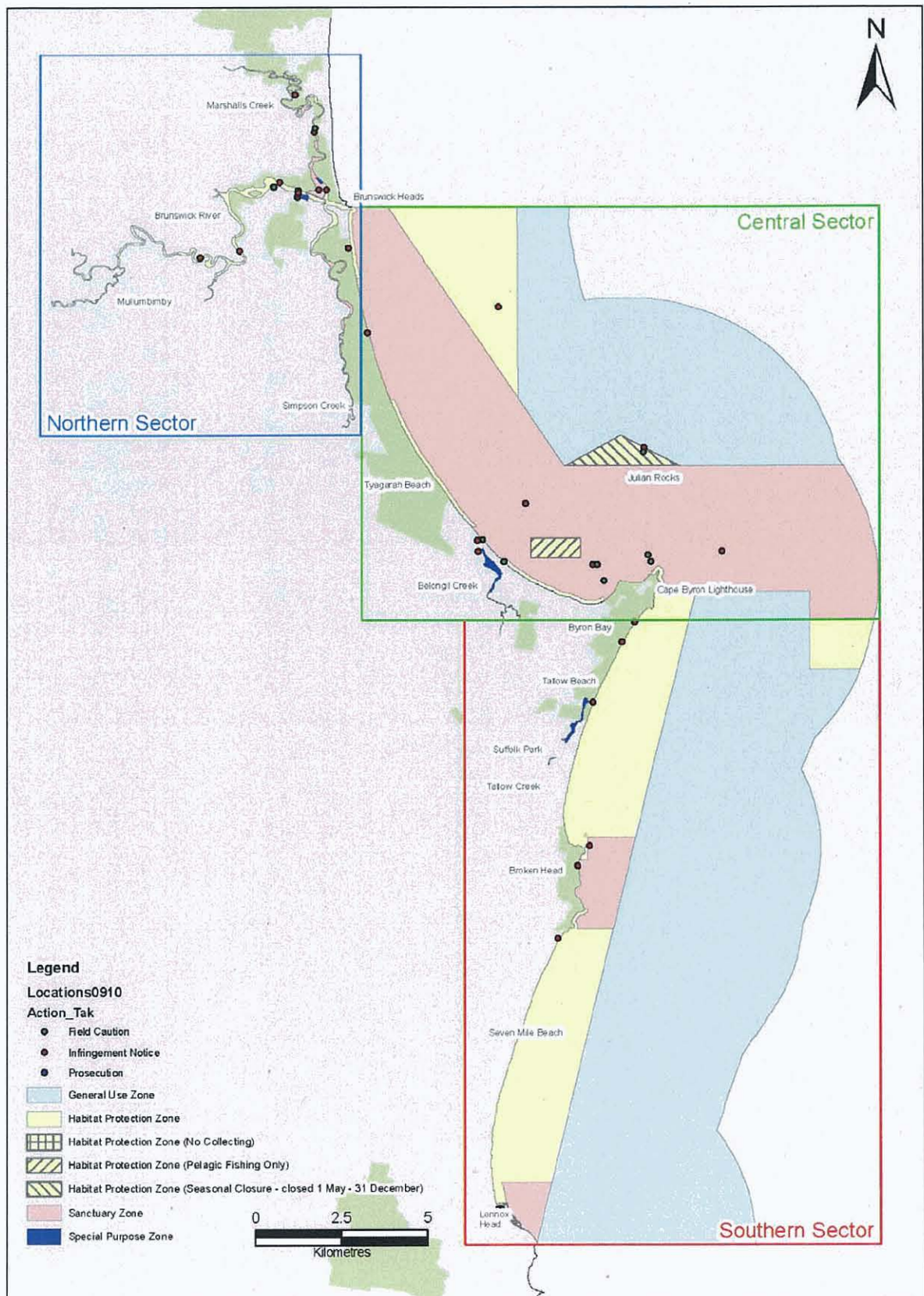
Figure 11 - Marine park legislation enforcement actions by age class in CBMP in 2009/10.



All enforcement actions recorded on the Nautilus database include location data (latitude, longitude), which was recovered as a GIS data layer for the analysis of enforcement action frequency by location. Map 1 illustrates where offences (both marine parks and fisheries) were recorded in CBMP in 2009/10. This spatial information provides an accurate picture of where enforcement actions and types of offences are taking place in the marine park. In areas where high numbers of actions are recorded, sometimes referred to as 'hot spots', patrol effort and compliance extension activities can be optimised to focus compliance programs in these areas. In CBMP there were no distinct hot spot areas in 2009/10; however, a small clump of actions were prevalent in and around the mouth of the Brunswick River.



Map 1 – Reported enforcement actions (Marine Parks and Fisheries) in CBMP by location 2009/10.



## 2. Solitary Islands Marine Park (SIMP)

In 2009/10 SIMP staff recorded a total 152 enforcement actions, comprising 65 marine park legislative enforcement actions which included 43 (66%) written cautions and 22 infringement notices (Figure 12); and 87 fisheries offences, including 55 written caution and 32 infringement notices (Figure 13). Combined enforcement actions by month show a seasonal influence in SIMP with most offences being recorded in the summer and Easter school holidays (Figure 14).

Figure 12 - Marine Parks legislation and Regulation enforcement actions in SIMP by month in 2009/10.

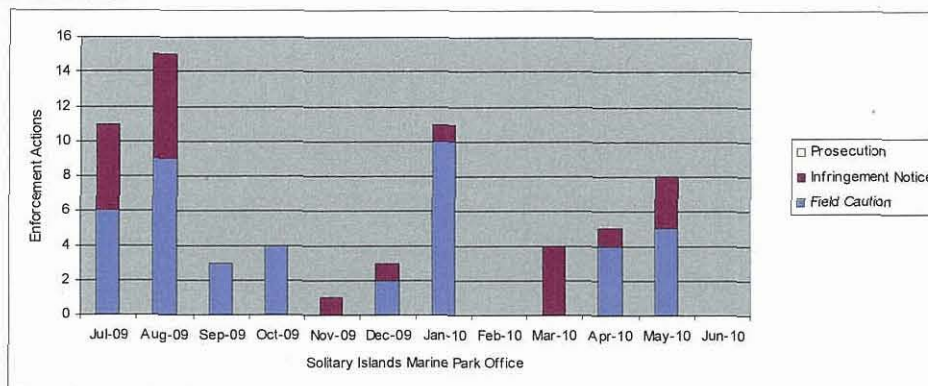


Figure 13 - Fisheries Management legislation and Regulation enforcement actions in SIMP by month in 2020.

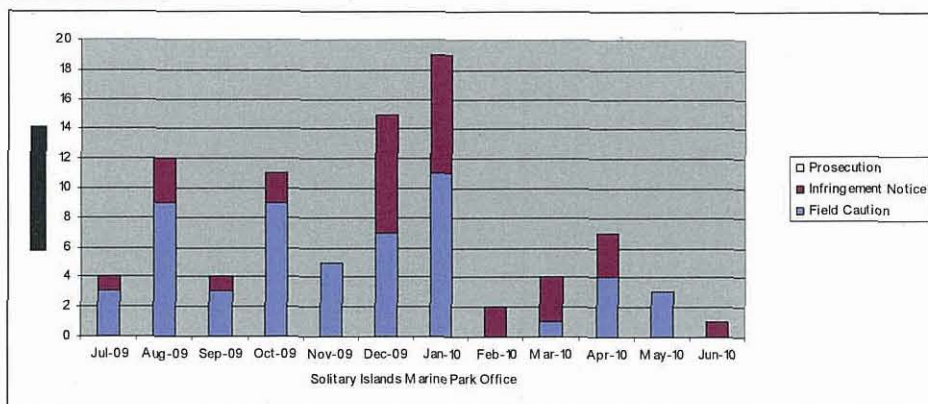
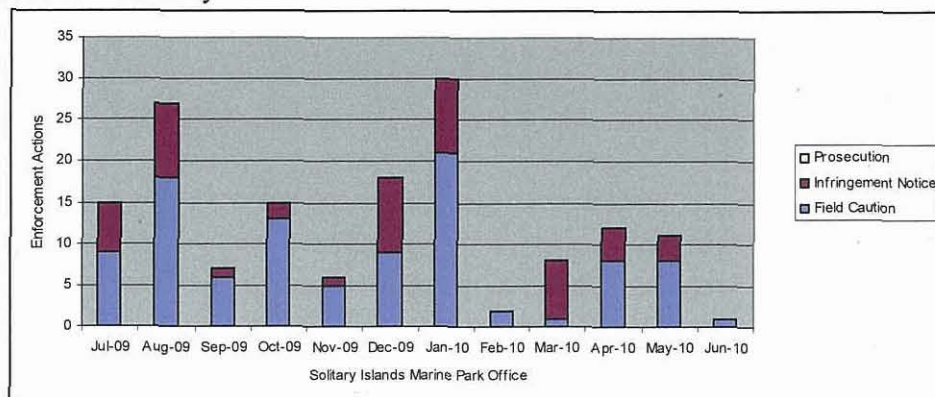


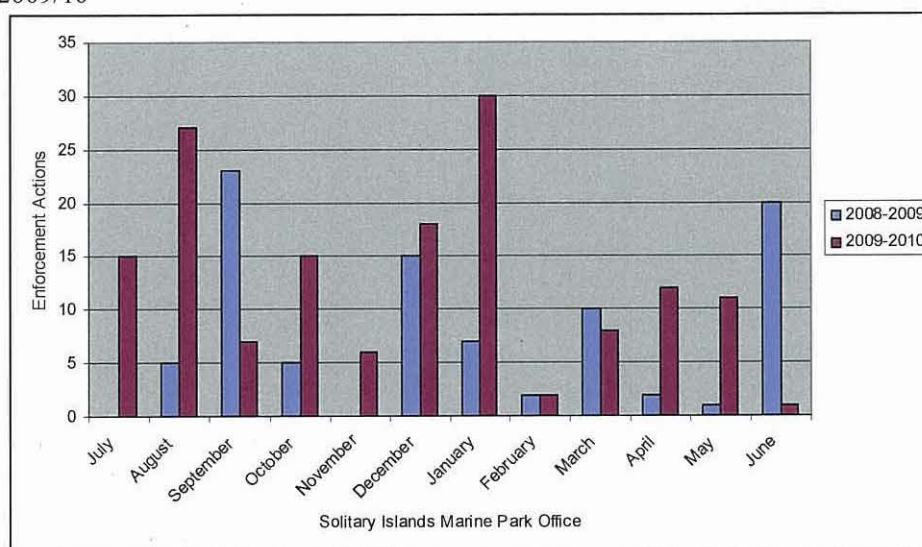
Figure 14 - Combined Marine Parks and Fisheries Management legislation enforcement actions in SIMP by month.





In comparison to the previous financial year, in 2009/10 more offences were reported in August, October, January, April and May, with fewer being reported in September and June. The relative substantial increase in enforcement actions reported in January 2009/10 is most likely due to an increase in patrol effort by staff (Figure 15), whilst the differences between September and October probably reflects school holiday dates. Similar to other parks there is no clear trend enforcement actions by month. However, with improvements in standardising reporting for effort, standardising discretion, and optimising enforcement actions using risk based compliance planning and geographic hot spot data, it is anticipated that trends over time will more accurately reflect local community responses to compliance strategies.

Figure 15 - Comparison of Marine Park Legislation Enforcement Actions for SIMP 2008/09 - 2009/10



In 2009/2010 SIMP commenced formal recording of enforcement actions by officer patrol hour in January. Although effort data was recorded before this time, the data was mixed with travel time hours and consequently skewed actual patrol time effort). In the first six months SIMP recorded a rate of 0.04 enforcement actions by patrol hour by officer. As most patrols include two officers this is equivalent to one enforcement action every 12.5 hours on patrol. Over the six month period SIMP enforcement actions by effort ranged from 0.00 (100% observed compliance effort = 90 hours and 112.5 hours) in February and June 2010 to 0.12 in January 2010.

Table 3 – Total Marine Park legislation enforcement actions per patrol hour by individual officer.

Solitary Islands Marine Park			
Mon Year	Actions	Hours	EA/hr
Jan-10	11	94.0	0.12
Feb-10	0	90.0	0.00
Mar-10	4	90.0	0.04
Apr-10	5	123.0	0.04
May-10	8	113.5	0.07
Jun-10	0	112.5	0.00
Total	28	623	0.04

The majority of marine park and fisheries offences reported in SIMP in 2009/10 were committed by local users (61%). This is similar outcome to the CBMP, which is also located in the same region of NSW. The majority of violations in SIMP were committed by 20-40 age groups (Figure 16 and 17).

Figure 16 – Comparison of visitor to local user enforcement actions (MPA and FMA) in SIMP in 2009/10

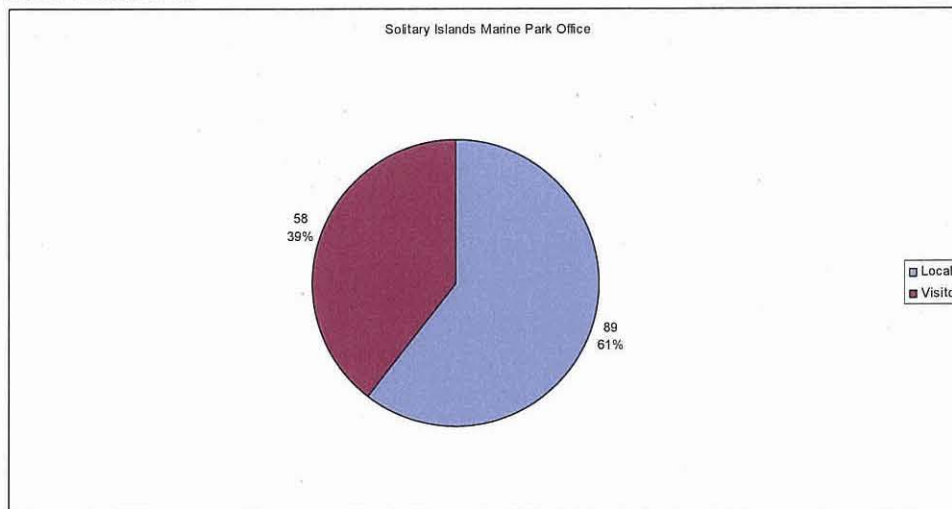
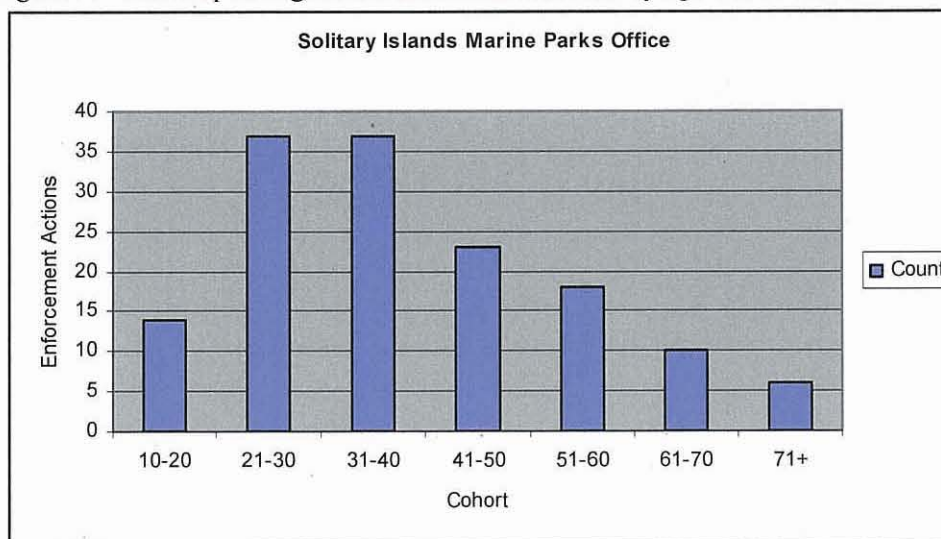


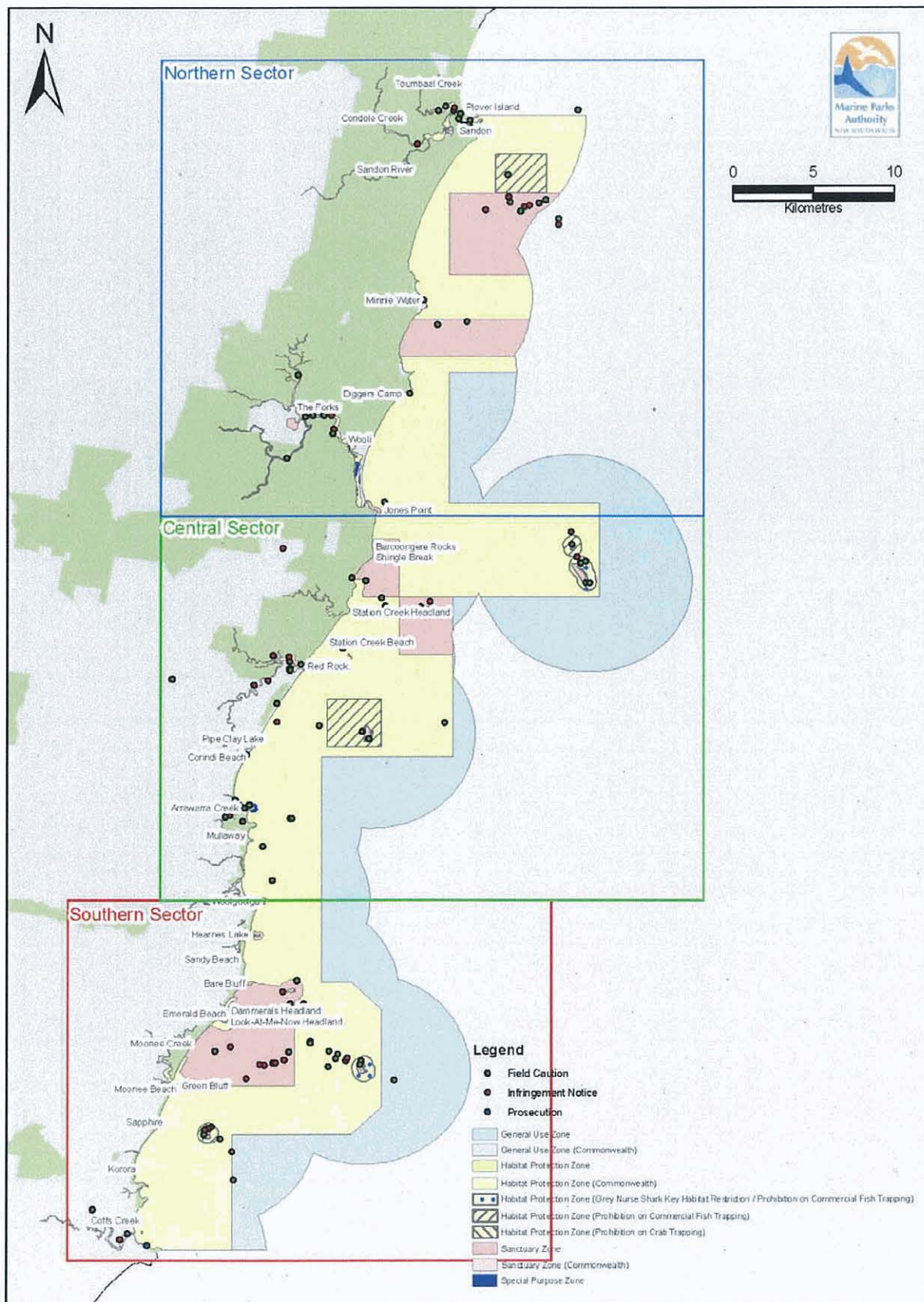
Figure 17 - Marine park legislation enforcement actions by age class in SIMP in 2009/10.



All enforcement actions recorded on the Nautilus database include location data, which was recovered as a GIS data layer for the analysis of enforcement action frequency by location. Map 2 illustrates where offences (both marine parks and fisheries) were recorded in SIMP in 2009/10. This spatial information provides an accurate picture of where enforcement actions and types of offences are taking place in the marine park. In areas where high numbers of actions are recorded, sometimes referred to as 'hot spots', patrol effort and compliance extension activities can be optimised to focus compliance programs in these areas. In SIMP there were no distinct hot spot areas in 2009/10; however, small clumps were prevalent in and around the mouth of rivers (Sandon, Woolli and Corindi) and islands near Coffs Harbour.



Map 2 – Reported enforcement actions (Marine Parks and Fisheries) in SIMP by location 2009/10.



### 3. Port Stephens – Great Lakes Marine Park (PSGLMP)

In 2009/10 PSGLMP staff recorded 701 combined enforcement actions, comprising 453 marine park legislative enforcement actions, including 361 (80%) written cautions and 87 infringement notices and 5 prosecutions (Figure 18); and 248 fisheries enforcement actions, including 148 written caution, 89 infringement notices and 11 prosecutions (Figure 19). Combined enforcement actions by month exhibit a seasonal/school holiday influence with by far the most offences being recorded in summer, particularly during the January holiday period (Figure 20).

Figure 18 - Marine Park legislation and Regulations enforcement actions in PSGLMP by month 2009/2010.

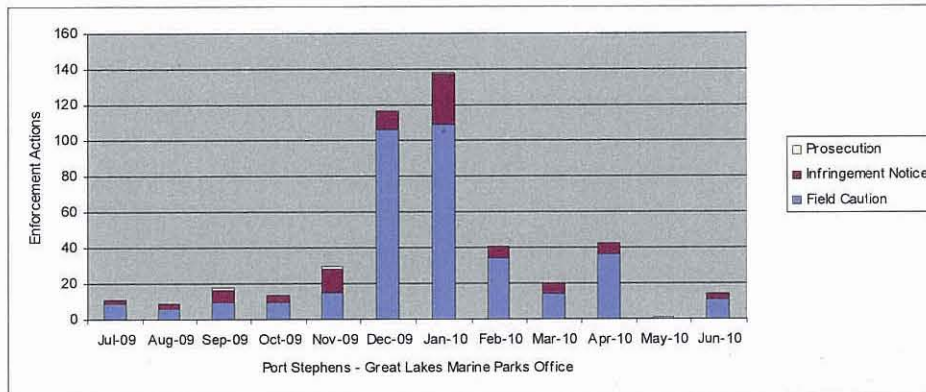


Figure 19 – Fisheries Management legislation and Regulations enforcement actions in PSGLMP by month 2009/2010.

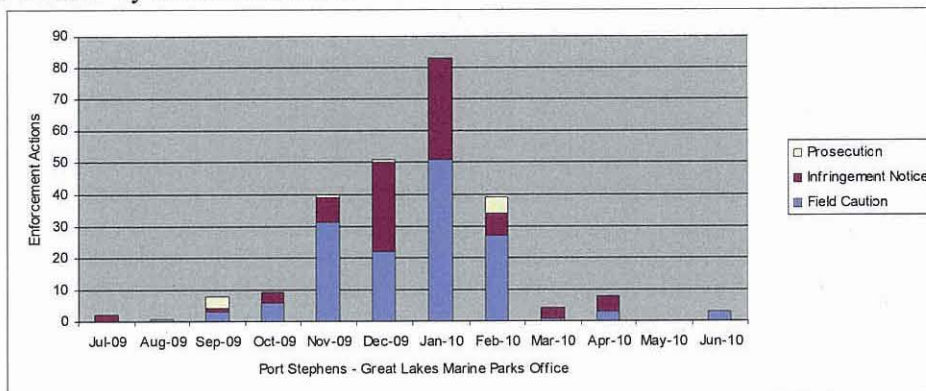
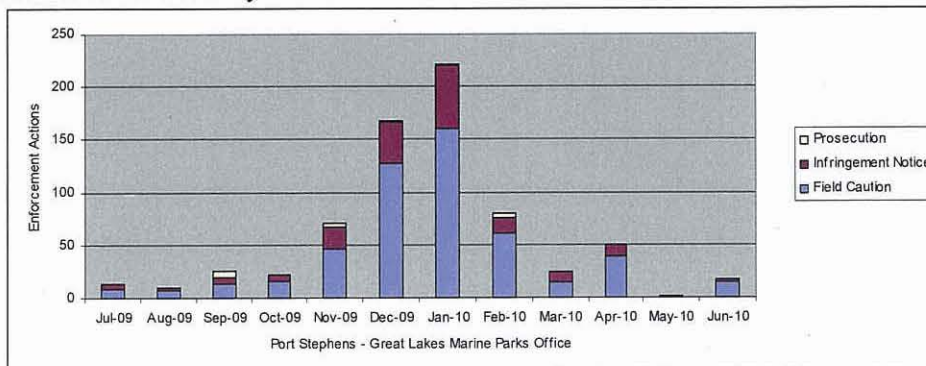


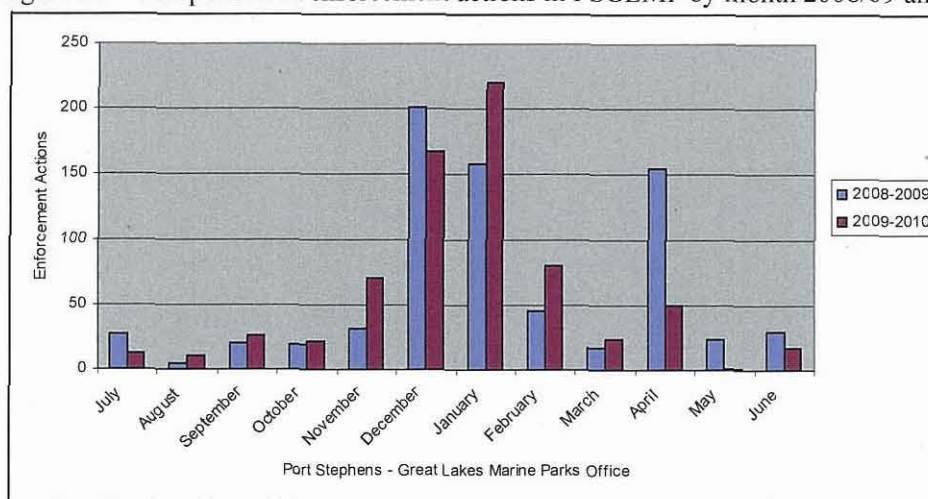
Figure 20 – combined Marine Park and Fisheries Management legislation enforcement actions in PSGLMP by month 2009/2010.





In comparison to the previous financial year, PSGLMP reported slightly more offences in January, with considerably less reported in April. The reduction in frequency in April was most likely attributed to reduced enforcement effort during this time (Figure 21). Similar to other parks, there is no clear trend in enforcement actions by month. However, with improvements in standardised effort reporting, induction of enforcement guidelines and policy, and optimisation of enforcement actions using risk based compliance planning and geographic hot spot data, it is anticipated that trends over time will more accurately reflect local community responses to compliance strategies.

Figure 21 – Comparison of enforcement actions in PSGLMP by month 2008/09 and 2009/10.



Total enforcement actions by patrol hour by officer for PSGLMP in 2009/10 was 0.65. As most patrols included two officers this rate equates to one action being reported every 46 minutes of boat time. Over the year, enforcement action by effort rates ranged from 0.22 in October 2009 to 1.14 (equivalent to approximately one action every 26 minutes by patrol) in April 2010.

Table 4 - PSGLMP Marine Park legislation Enforcement Actions by Patrol Effort (person hrs) by Month in 2009/10.

Port Stephens - Great Lakes Marine Park			
Mon Year	Action	Hours	EA/hr
Jul-09	10	16	0.63
Aug-09	7	35.5	0.20
Sep-09	18	44	0.41
Oct-09	13	59.5	0.22
Nov-09	30	42	0.71
Dec-09	116	194	0.60
Jan-10	138	148.5	0.93
Feb-10	41	61.5	0.67
Mar-10	20	27	0.74
Apr-10	42	37	1.14
May-10	1	1	1.00
Jun-10	14	32	0.44
Total	453	698	<b>0.65</b>

In contrast to CBMP and SIMP, the majority of enforcement actions reported in PSGLMP were committed by visitors (62%). Information relating to visitor and local compliance is important for compliance performance purposes, and operational plans for individual marine

parks now require this information to show trends in the frequency of enforcement actions committed by local users over patrol time over the life of the operational plan.

PSGLMP reflects the combined dataset for all marine parks in that most violations in 2009/10 were committed by the age classes in the 21-40 year range (Figure 22 and 23).

Figure 22 – comparison of visitor to local user enforcement actions (MPA and FMA) in PSGLMP in 2009/10

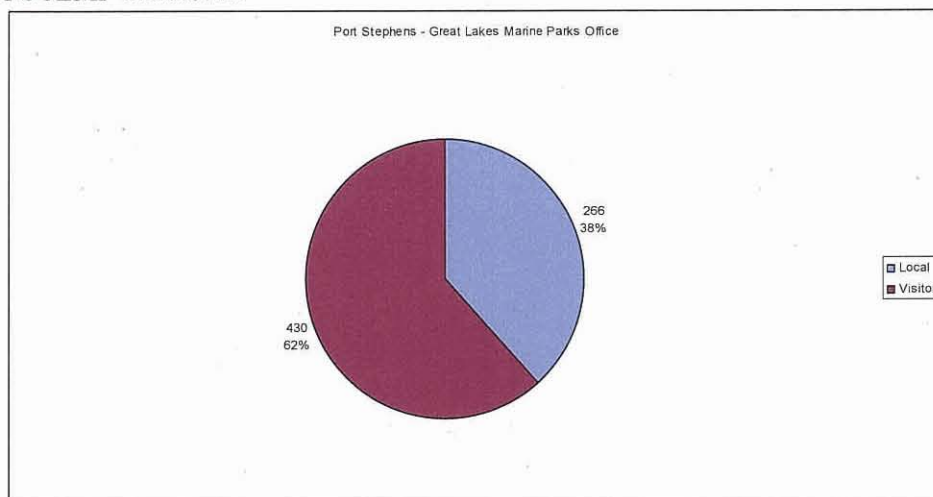
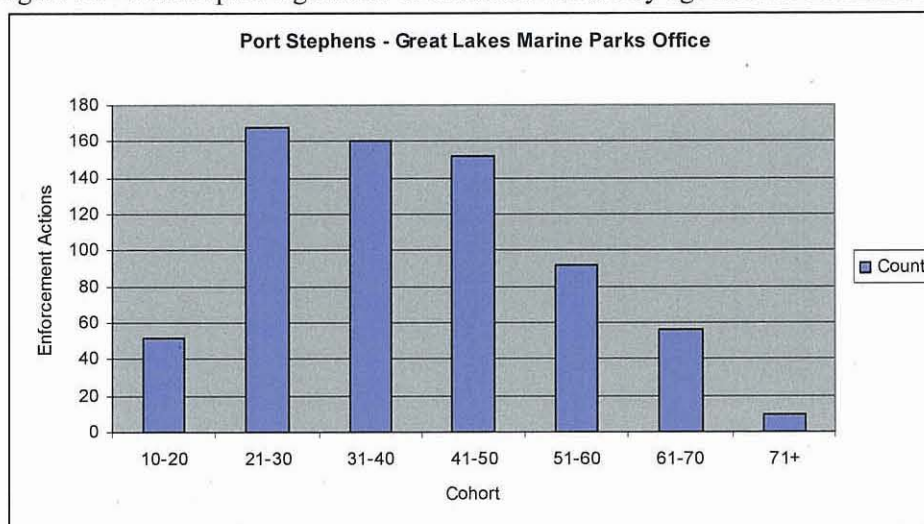


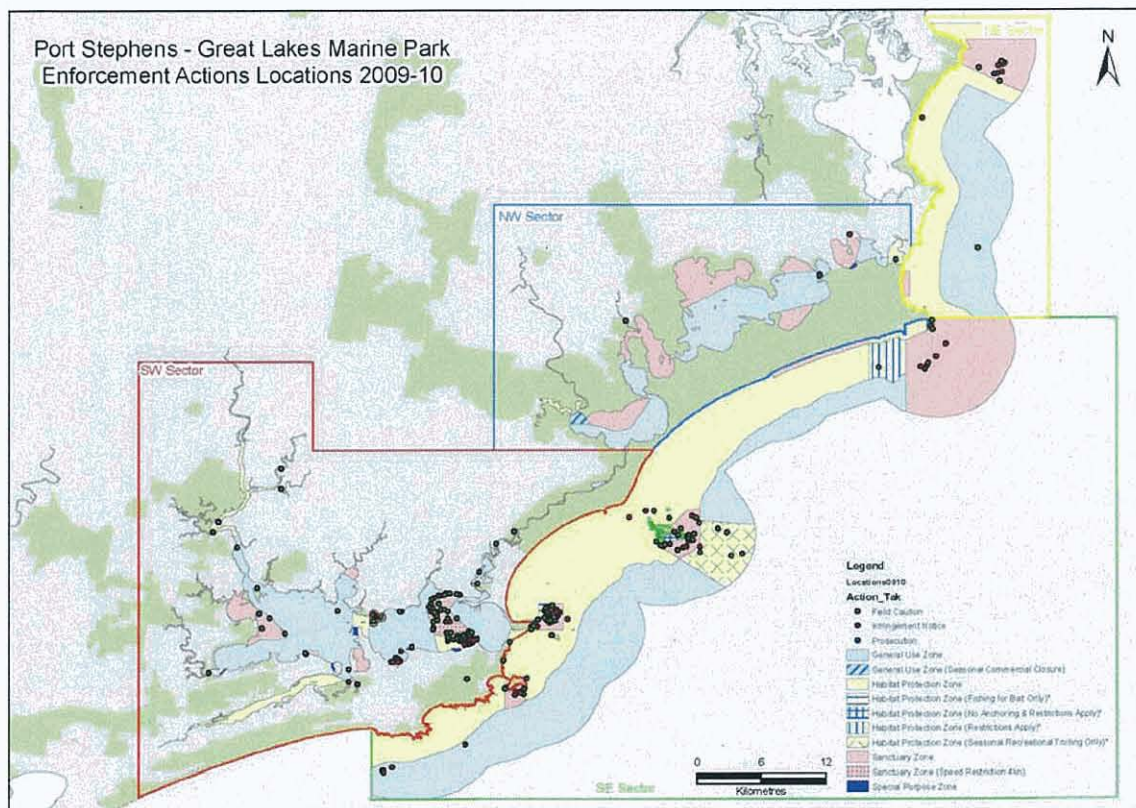
Figure 23 - Marine park legislation enforcement actions by age class in PSGLMP in 2009/10.



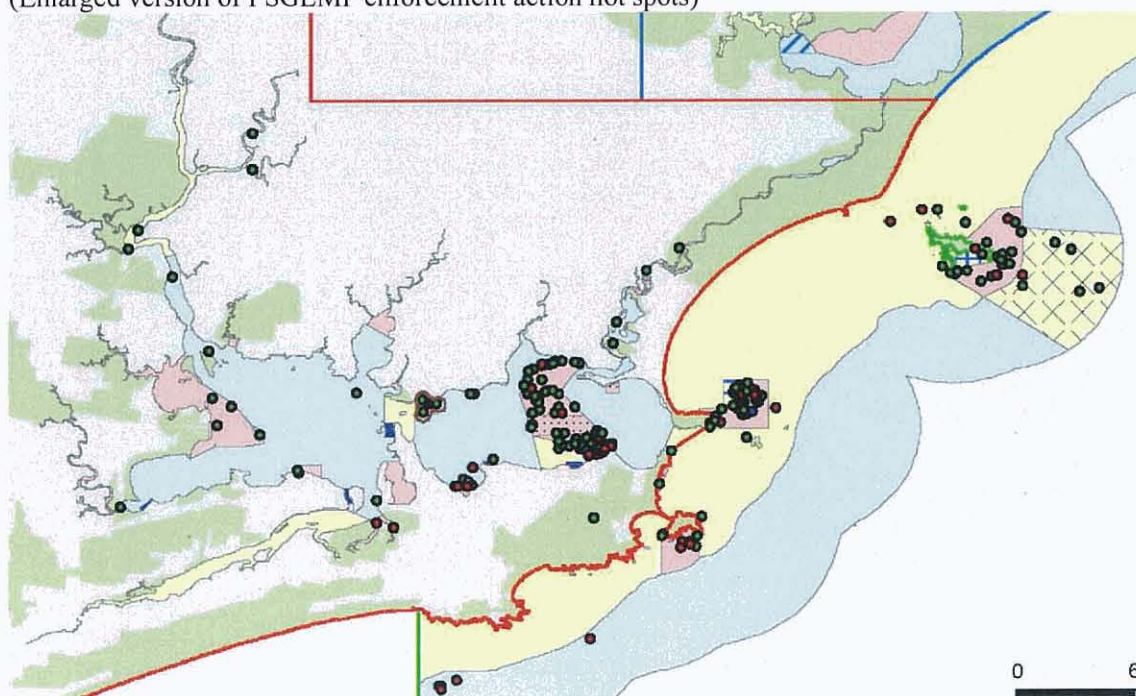
All enforcement actions recorded on the Nautilus database include location data which was recovered as a GIS data layer for the analysis of enforcement action frequency by location. Map 3 illustrates where offences (both marine parks and fisheries) were recorded in PSGLMP in 2009/10. This spatial information provides an accurate picture of where enforcement actions and types of offences are taking place in the marine park. In areas where high numbers of actions are recorded, sometimes referred to as 'hot spots', patrol effort and compliance extension activities can be optimised to focus compliance programs in these areas. PSGLMP has clear hot spot areas where enforcement actions are prevalent these include, Fly Point/ Corrie Island SZ, Cabbage Tree Island and Broughton Island.



Map 3 – Reported enforcement actions (Marine Parks and Fisheries) in PSGLMP by location 2009/10.



(Enlarged version of PSGLMP enforcement action hot spots)



#### 4. Jervis Bay Marine Park (JBMP)

In 2009/10 JBMP staff recorded a total of 148 enforcement actions, comprised of: 95 marine park legislative enforcement actions, including 53 (56%) written cautions, 34 infringement notices and 8 prosecutions (Figure 24); and 48 fisheries offences, including 22 written cautions, 20 infringement notices and 6 prosecutions (Figure 25). Combined enforcement actions by month exhibited a seasonal influence with by far the most offences being recorded in summer and Easter holiday periods, particularly during the January school holiday (Figure 26).

Figure 24 - Marine Park legislation and Regulations enforcement actions in JBMP by month 2009/10.

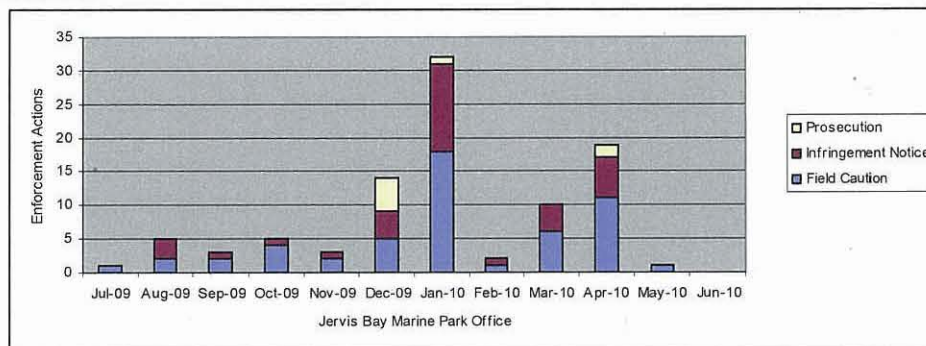


Figure 25 - Fisheries legislation and Regulations enforcement actions in JBMP by month 2009/10.

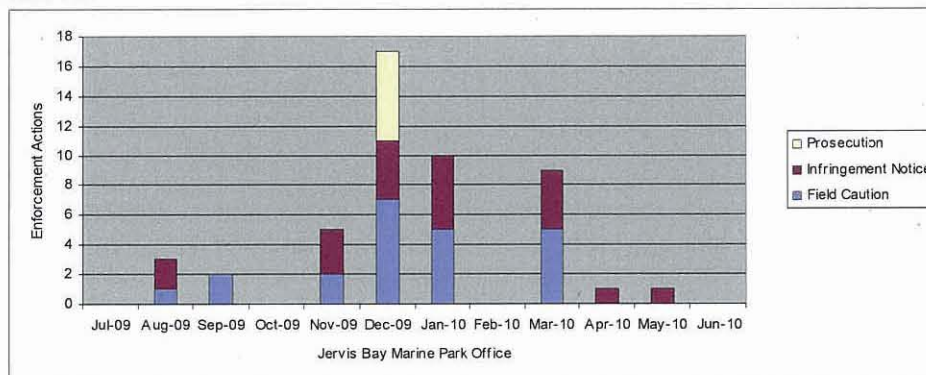
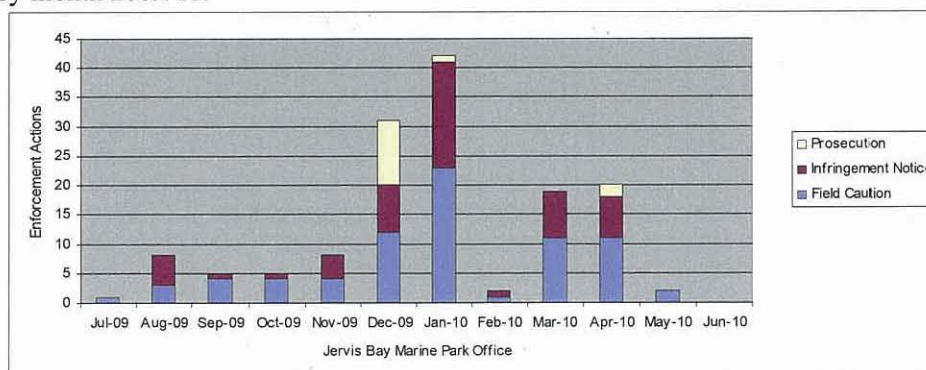


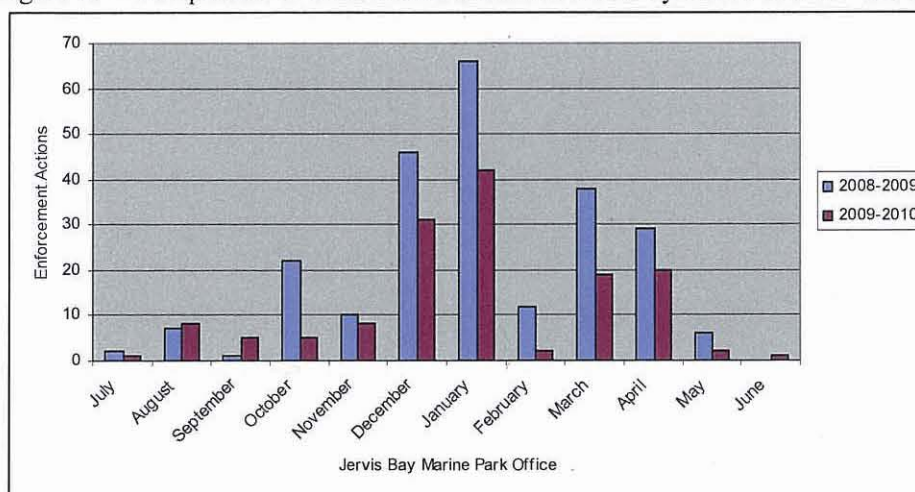
Figure 26 – Combined Marine Park and Fisheries legislation enforcement actions in JBMP by month 2009/10.





In comparison to the previous financial year there was a notable decline in enforcement actions in December, January and Easter months in 2010. Although there is no clear trend in JBMP enforcement actions by month at this time, a decline in actions over these months is a positive sign (provided that patrol effort was not reduced).

Figure 27 – Comparison of enforcement actions in JBMP by month 2008/09 and 2009/10.



Total enforcement action by patrol hour by officer for JBMP was 0.12. As most patrols in JBMP included two officers this equates to approximately one action every 4.2 hours of patrol. Over the year, enforcement action by effort ranged from 0.02 in July 2009 to 0.24 (equivalent to approximately one action every 2.1 hours by patrol) in April 2010.

Table 5 – JBMP Marine Park legislation Enforcement Actions by Patrol Effort (person hrs) by Month in 2009/10.

Jervis Bay Marine Park			
Mon Year	Actions	Hours	EA/hr
Jul-09	1	66	0.02
Aug-09	5	83.5	0.06
Sep-09	3	52	0.06
Oct-09	5	107	0.05
Nov-09	3	96	0.03
Dec-09	14	77	0.18
Jan-10	32	137	0.23
Feb-10	2	43.5	0.05
Mar-10	10	52	0.19
Apr-10	17	70.5	0.24
May-10	1	21	0.05
Jun-10	0	0	0.00
Total	95	805.5	0.12

In 2009/10 the majority of marine park enforcement actions reported in JBMP was committed by visitors to the park (67% - similar to PSGLMP). This information relating to visitor /local compliance is important for compliance performance purposes, and operational plans for individual marine parks now require this information to show trends in the frequency of enforcement actions committed by local users over patrol time over the life of the operational plan.

In respect to age of offenders, JBMP exhibited a different pattern from total combined data, with a higher percentage of violations in 2009/10 being committed by the 41-50 age class. (Figure 28 and 29).



Figure 28 – Comparison of visitor to local user enforcement actions (MPA and FMA) in JBMP in 2009/10

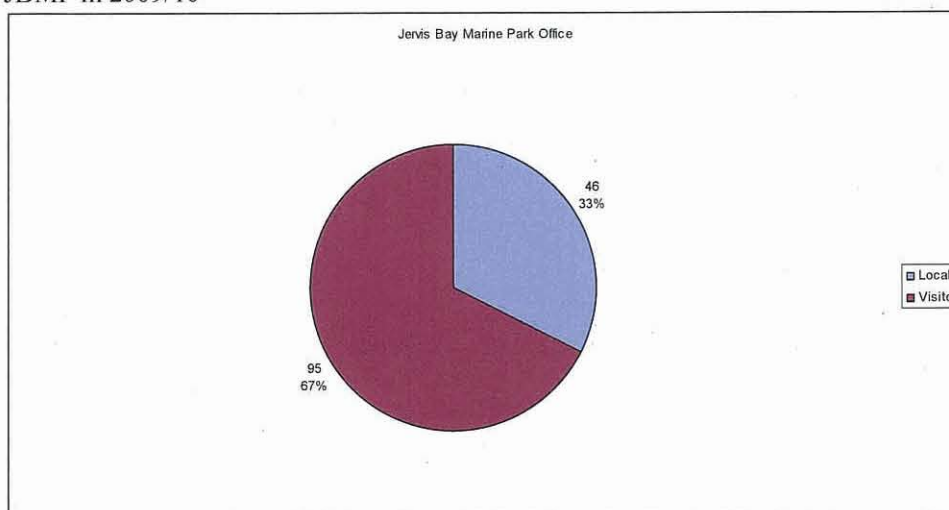
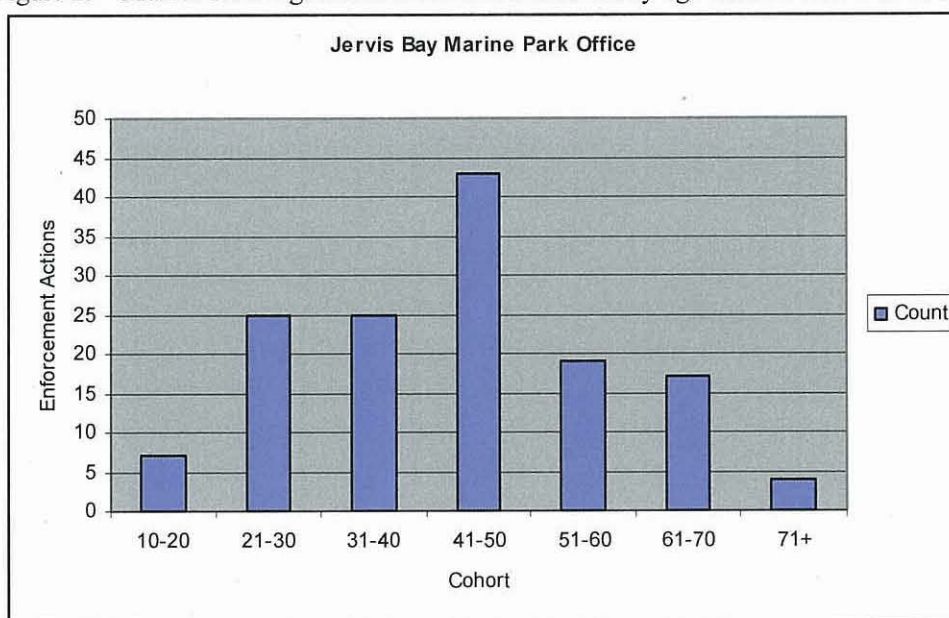
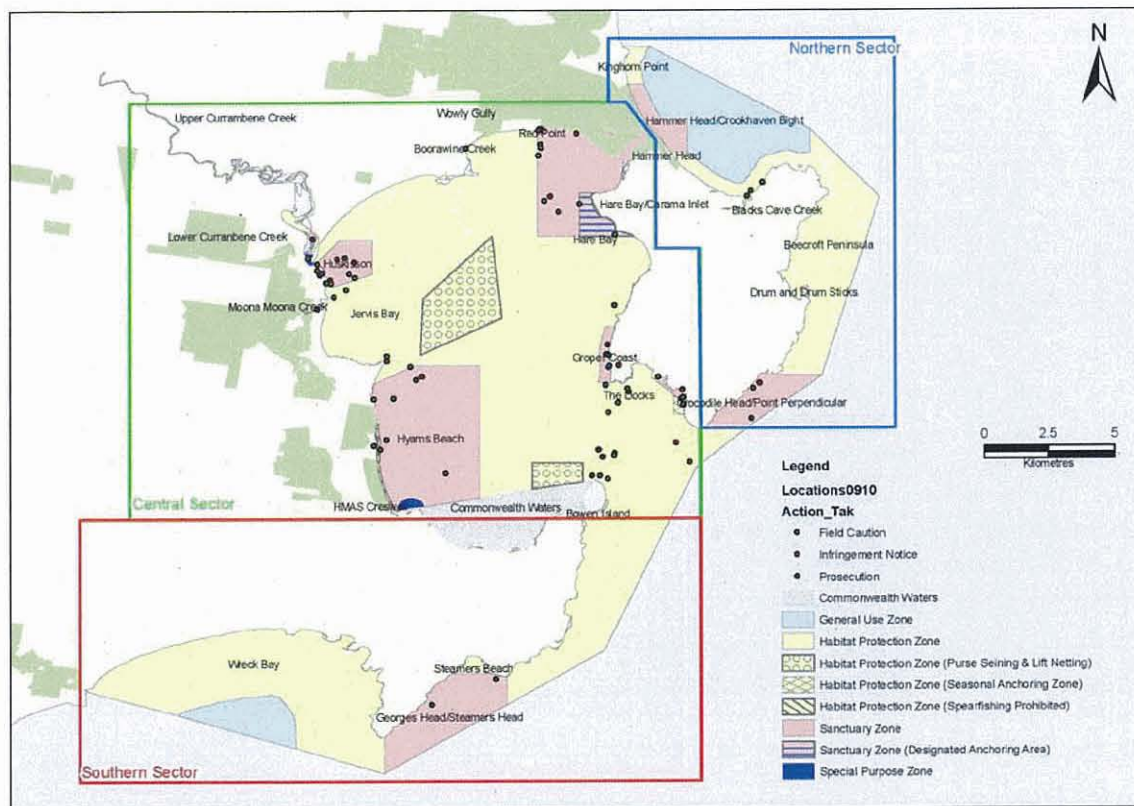


Figure 29 - Marine Park legislation enforcement actions by age class in JBMP in 2009/10.



All enforcement actions recorded on the Nautilus database include location data which was recovered as a GIS data layer for the analysis of enforcement action frequency by location. Map 4 illustrates where offences (both marine parks and fisheries) were recorded in JBMP in 2009/10. This spatial information provides an accurate picture of where enforcement actions and types of offences are taking place in the marine park. In areas where high numbers of actions are recorded, sometimes referred to as 'hot spots', patrol effort and compliance extension activities can be optimised to focus compliance programs in these areas. JBMP reported a higher frequency of actions near Huskisson. Most offences recorded were inside Jervis Bay, with few offences outside the headlands.

Map 4 – Reported enforcement actions (Marine Parks and Fisheries) in JBMP by location 2009/10.



## 5. Batemans Marine Park (BMP)

In 2009/10 BMP staff recorded a total of 138 enforcement actions, comprising: 120 marine park legislative enforcement actions, including 109 (91%) written cautions and 11 infringement notices (Figure 30); and 18 fisheries offences, including 11 written caution and 7 infringement notices (Figure 31). Combined enforcement actions by month exhibited a marked summer holiday influence with most offences being recorded in January 2010 (Figure 32).

Figure 30 - Marine Park legislation and Regulations enforcement actions in BMP by month 2009/10.

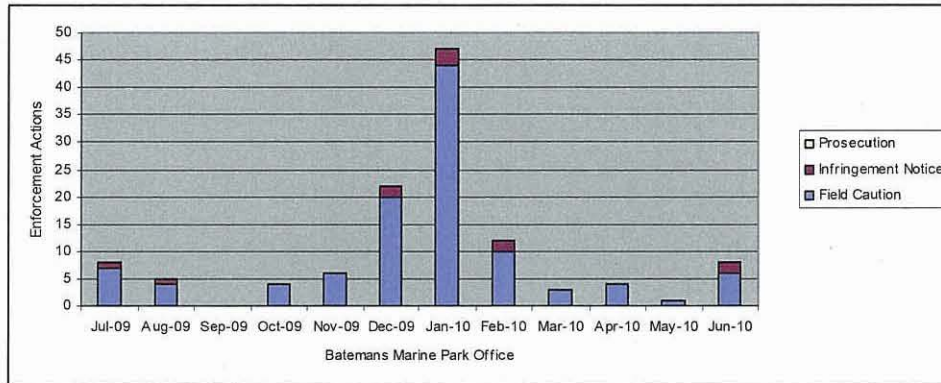


Figure 31 – Fisheries Management legislation and Regulations enforcement actions in BMP by month 2009/10.

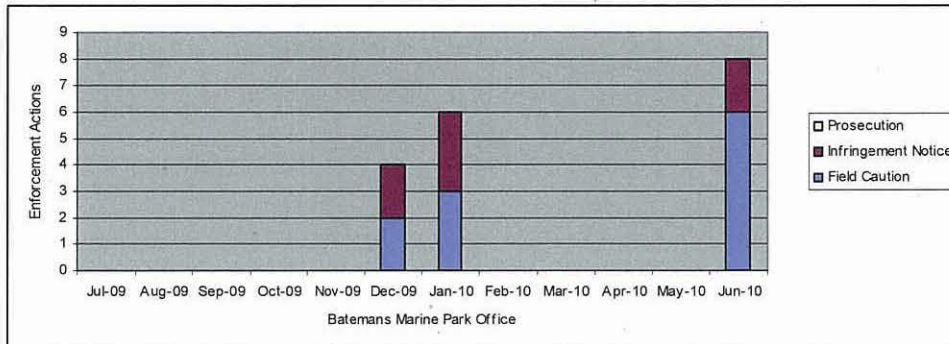
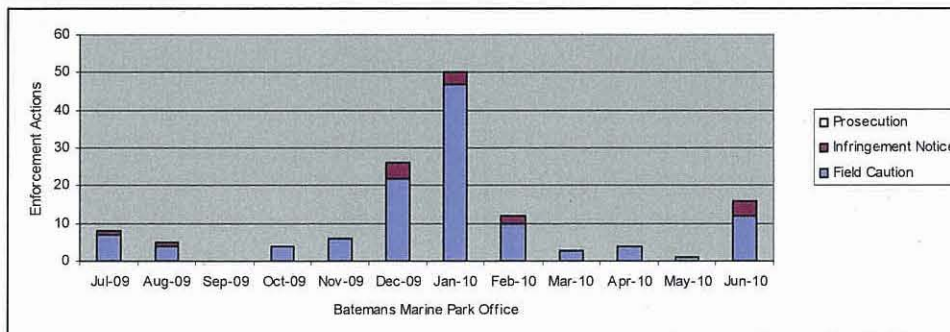


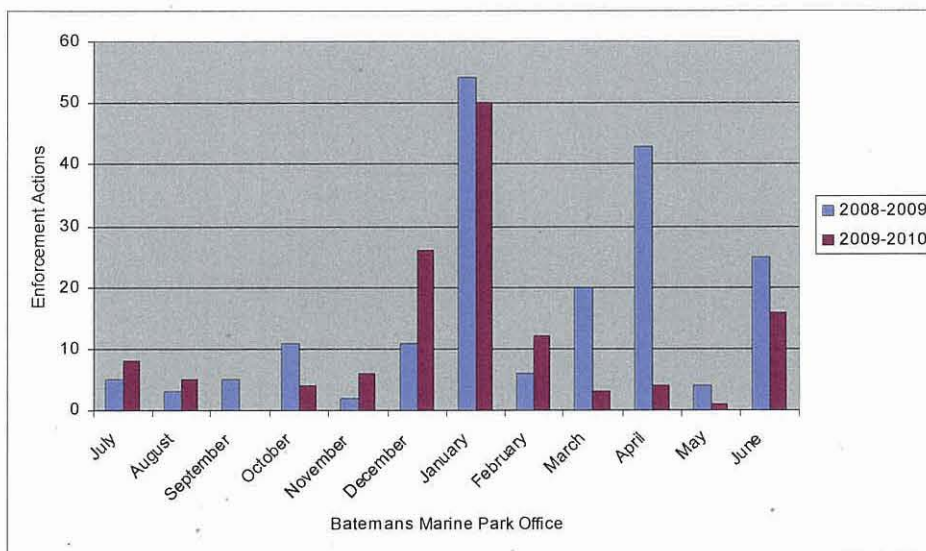
Figure 32 – Combined Marine Park and Fisheries legislation enforcement actions in BMP by month 2009/10.





In comparison to the previous financial year there was a notable decline in enforcement actions in March and April 2010, otherwise there was very little difference by month by enforcement action frequency. Reasons for this decline are undetermined but are most likely attributed to reduced enforcement effort at this time. Similar to other parks, at this time there no clear trend in enforcement actions by month. However, with improvements in standardising reporting for effort, standardising discretion (e.g., high percentage of written cautions cf. infringements than other parks), optimising enforcement actions using risk based compliance planning and geographic hot spot data, it is anticipated that trends over time will more accurately reflect local community responses to compliance strategies.

Figure 33 – Comparison of enforcement actions in BMP by month 2008/09 and 2009/10.



BMP commenced formal recording of enforcement actions by officer patrol hour in January 2010 (same as SIMP). Although effort data was recorded before this time, the data was mixed with travel time hours and consequently skewed actual patrol time effort). In the first six months BMP recorded a rate of 0.12 (Table 6). As most patrols include two officers this equates to one action every 4.2 hours on patrol. Over the six month period, BMP enforcement/ effort rate ranged from 0.01 (close to 100% observed compliance effort = 85 hours) in May to 0.46 in January 2010 (approximately one action per 1.1 hours per patrol).

Table 6 – BMP Marine Park legislation enforcement actions per patrol hour by individual officer.

Batemans Marine Park			
Mon Year	Actions	Hours	EA/hr
Jan-10	47	101.5	0.46
Feb-10	12	98	0.12
Mar-10	3	83	0.04
Apr-10	4	94	0.04
May-10	1	85	0.01
Jun-10	8	143	0.06
Total	75	604.5	0.12



The majority of marine park related enforcement actions reported in BMP in 2009/10 were committed by visitors (74%). BMP generally reflected the combined dataset for all marine parks, with a high percentage of violations in 2009/10 being committed by younger (20-30 years) age classes, but similar to JBMP the highest percentage age group was 41-50 (Figure 28 and 29).

Figure 34 – Comparison of visitor to local user enforcement actions (MPA and FMA) in BMP in 2009/10

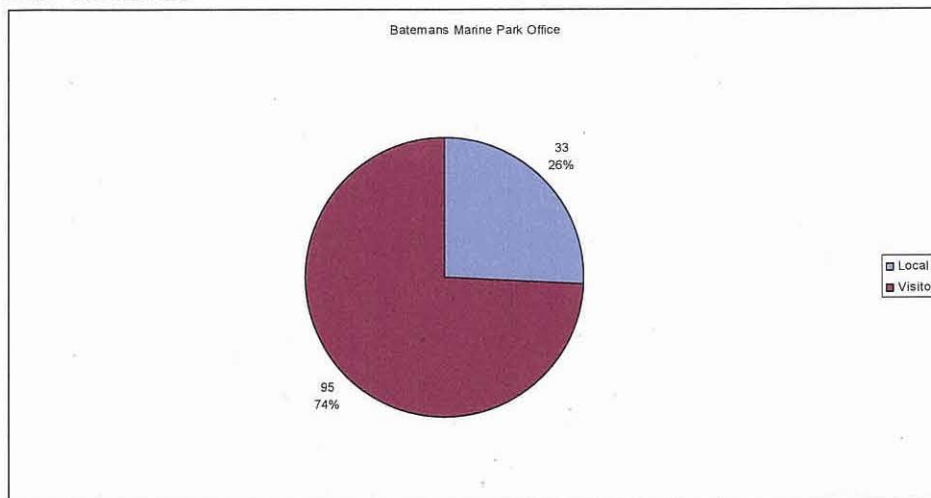
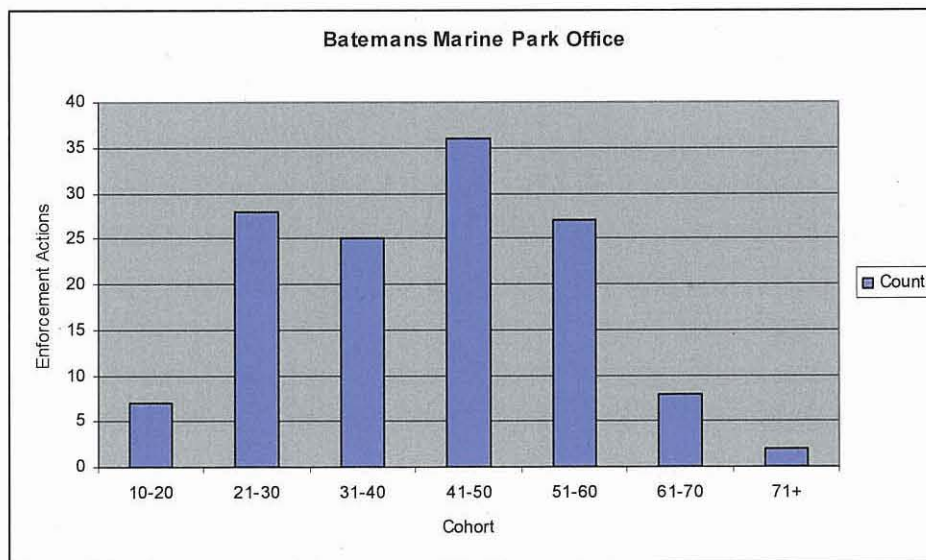
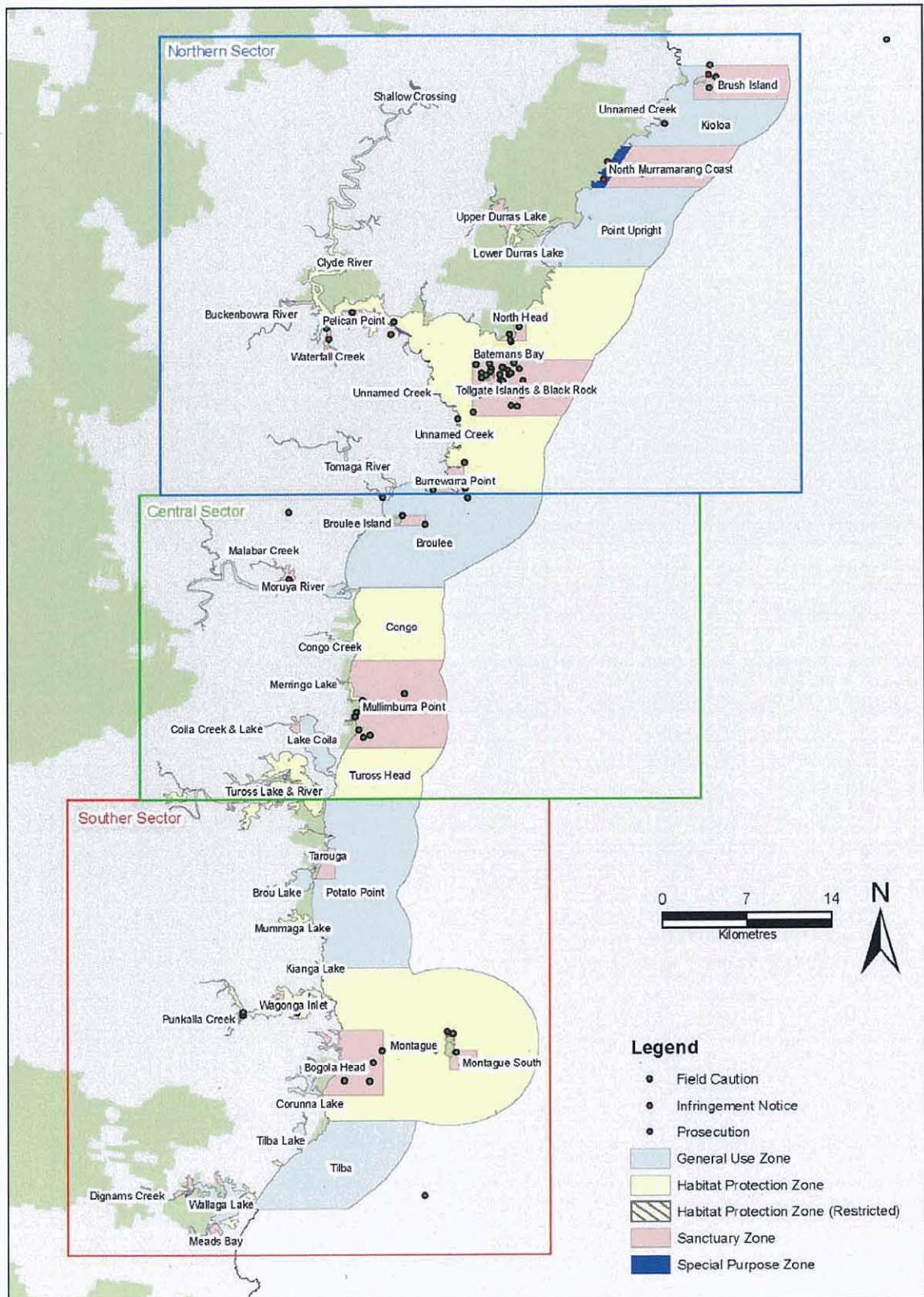


Figure 35 - Marine Park legislation enforcement actions by age class in BMP in 2009/10.



All enforcement actions recorded on the Nautilus database include location data which was recovered as a GIS data layer for the analysis of enforcement action frequency by location. Map 5 illustrates where offences (both marine parks and fisheries) were recorded in BMP in 2009/10. This spatial information provides an accurate picture of where enforcement actions and types of offences are taking place in the marine park. In areas where high numbers of actions are recorded, sometimes referred to as 'hot spots', patrol effort and compliance extension activities can be optimised to focus compliance programs in these areas. In this regard, BMP has an identifiable 'hot spot' at Batemans Bay at the Tollgate and Black Rock Islands.

Map 5 – Reported enforcement actions (Marine Parks and Fisheries) in BMP by location 2009/10.



**Appendix 1**  
**Marine Parks Authority Compliance**  
**Work Plan 2009 – 2010**

## Appendix 1 - Marine Parks Authority Compliance Work Plan 2009 – 2010

GOAL 1 – TO MAXIMISE VOLUNTARY COMPLIANCE		
Objective	Actions	Performance
Build cooperative partnerships with marine park stakeholders, to improve and obtain a high level of voluntary compliance.	1. Develop an agreed fishing competition policy for marine parks.	60% - discussion paper prepared by I&I NSW following two workshops with recreational fishing stakeholders
	2. Develop and communicate a Marine Park Cultural Resource Policy - to internal and external stakeholders.	80% - policy completed. A number Aboriginal Groups have been briefed including CBMP and PSGMLP
Generate community confidence and understanding through effective utilisation of media, public awareness and education.	3. In partnership with I&I NSW, develop an agreed media response model to improve effectiveness and delivery of compliance related media for marine parks.	100% - media representatives have met and have adopted standardised working arrangements consistent with the MPA Operational Agreement
	4. Develop primary school education kit for marine parks – the overall aim of the project is to educate primary school students on the rationale behind marine conservation and the importance of the various habitats within the near-shore marine environment (Environmental Trust Grant).	100% - the kit was publicly released on 20 August 2010
Improve utility of marine park laws and management, and to strengthen linkage between policies, legislative and administrative processes.	5. Progress the review and development of a standardised state-wide MPA permit issuing system.	50% - review underway in 2010/11, good progress has been made with this review including seeking early advice from the Advisory Council.
	6. Develop standardised permit conditions for whale and dolphin watching, and interim conditions for recreational fishing competitions.	Underway as part of the permit policy system review in 2010/11.



<b>GOAL 2 – TO CREATE EFFECTIVE DETERRANCE</b>		
<b>Objective</b>	<b>Actions</b>	<b>Performance</b>
Improve efficiencies and effectiveness of compliance operations.	7. Ongoing development of standardised enforcement guidelines for marine park regulatory compliance	Annual joint workshop held 19-20 April 2010 to finalise compliance plans and discuss enforcement procedures.  Enforcement guidelines for marine park sanctuary zones were adopted by the MPA
	8. Develop standardised annual marine park compliance plans for all marine parks including standard method for compliance risk analysis.	100% - all parks have completed risk-based annual local compliance plans consistent with the MPA compliance committee endorsed framework.
Improve legal enforcement capacity.	9. Commence arrangements to streamline DECCW authorisation of staff as: 1) Marine Park Rangers under the <u>Marine Parks Act 1997</u> ; 2) Fisheries Officers under the <u>Fisheries Management Act 1994</u> 3) Environment Officers under the <u>Protection of the Environment Operations Act</u>  Park Rangers under the National Parks and Wildlife Service Act 1974 (e.g. in relation to seabirds and mammals); and, where relevant, and Commonwealth Officers/Wardens under the EPBC Act (e.g. LHIMP, SIMP and JBMP).	Preliminary discussions commenced.
	10. Develop operational agreement with NSW Maritime Operational Arrangement	100% - MPA and NSW Maritime signed new agreement on 18/01/10

<b>GOAL 2 – TO CREATE EFFECTIVE DETERRANCE (cont)</b>		
<b>Objective</b>	<b>Actions</b>	<b>Performance</b>
Exercise enforcement action within the context of wider government policy and statutory requirements through coordinated enforcement among various agencies responsible for users in and adjacent to marine parks.	11. In partnership with I&I NSW (Fisheries), DECCW (EPRG & PWG), Customs, Water Police and NSW Maritime, facilitate opportunities for joint marine park operations including surveillance activities, and inter marine park operations.	Included in local compliance planning.
	12. Provide for the cross-authorisation for I&I NSW Fisheries Officers, relevant National Park Wildlife Rangers and investigators, and local council officers,	Ongoing. Training package was revised for National Park Rangers.
Provide for effective officer safety.	13. Develop and maintain Safety Work Method Statements for identified marine park compliance activities, in consultation with I&I NSW.	Ongoing.
	14. Provide for specialised officer training relating to OHS needs.	Ongoing.
Improve data management systems and data access across marine parks.	15. Provide and support data management and I&I NSW Nautilus access services for MPA staff.	Ongoing, Nautilus database was updated to provide for data entry and analysis of effort.
	16. Implement Nautilus and Compliance effort reporting arrangements.	Ongoing.
	17. Prepare marine park compliance reports for the MPA on a quarterly basis in conjunction with I&I NSW Fisheries.	100% - quarterly reports were provided.
Integrate reporting arrangements between I&I NSW and MPA for better communication.	18. Integrated arrangements with I&I NSW for reporting compliance outcomes in marine parks (utilising Nautilus database), in order to provide consistent and comprehensive reporting to government and other key stakeholders.	Ongoing.

## Appendix 2 - Marine Park Prosecutions 2009/2010 (Date of sentence 1 July 2009 to 30 June 2010)

Defendant	Charge Description	Legislation	Result	Fine	Court
ALLEN, ANDREW WILLIAM	Attempt to harm animal in sanctuary zone	MPR	Convicted	\$2,000	NOWRA LOCAL COURT
BAILLIE, WILLIAM	Attempt to harm animal in sanctuary zone	MPR	Convicted	\$2,000	NOWRA LOCAL COURT
CLOUTEN, TONY ALLAN	2 x Abuse marine parks officer	MPA	Convicted	\$800	FORSTER LOCAL COURT
CLOUTEN, TONY ALLAN	2 x Assault marine parks officer	MPA	Convicted	\$2000 and ordered boat to be forfeited	FORSTER LOCAL COURT
CLOUTEN, TONY ALLAN	Possess animal taken unlawfully	MP(ZP)R	Convicted	\$900	FORSTER LOCAL COURT
CLOUTEN, TONY ALLAN	Possess equipment prohibited in marine parks	MP(ZP)R	Convicted	\$800	FORSTER LOCAL COURT
DAVIDSON, GARY DENNIS	Attempt to harm animal in sanctuary zone	MPR	Convicted	\$200	MAITLAND LOCAL COURT
DIXON, PAUL GILBERT	Attempt to harm animal in sanctuary zone	MPR	s.10	\$0	RAYMOND TERRACE LOCAL COURT
GRAY, PETER WILLIAM	Attempt to harm animal in sanctuary zone	MPR	Convicted	\$250	BATEMANS BAY LOCAL COURT
HENLY, ANTHONY GRAHAM	Use motorised vehicle in marine park	MPR	Convicted	\$200	MORUYA LOCAL COURT
JENSEN, RICHARD	Failure to possess official receipt	FMA	Convicted	\$100	NOWRA LOCAL COURT
JENSEN, RICHARD	Attempt to harm animal in sanctuary zone	MPR	Convicted	\$300	NOWRA LOCAL COURT
KORKIDAS, JOHN	Possess fishing gear in sanctuary zone	MPR	Convicted	\$500	MAITLAND LOCAL COURT
MEHAJER, RABIH	Attempt to harm animal in sanctuary zone	MPR	Convicted	\$500	SUTHERLAND LOCAL COURT
ROBERTS, BEN	Harm animal in sanctuary zone	MPR	Convicted	\$600	BATEMANS BAY LOCAL COURT
SMITH, GEORGE ALLAN	Attempt to harm animal in sanctuary zone	MPR	Convicted	\$100	GRAFTON LOCAL COURT
YOUNG, STANLEY	Contravene permit condition	MPR	Convicted	\$1,000	GRAFTON LOCAL COURT
ZAPPIS, NICKOLAOS	Conduct activity for money in marine park	MPR	Convicted	\$4,000	RAYMOND TERRACE LOCAL COURT

Information supplied by DECCW Legal Branch