7.0 POLICIES, OBJECTIVES, AND PLANNED ACTIONS FOR INRMP COMPONENTS

7.1 OVERVIEW

This chapter presents the policies, objectives, and planned actions for MCAS Miramar to achieve the Marine Corps' natural resources management goals to support the military operational requirements of the Station. These goals, as set forth in MCO P5090.2A (see Appendix C), are as follows:

- preserve the Marine Corps' mission access to air, land, and sea resources
- strengthen national security by strengthening conservation aspects of environmental security
- preserve the opportunity for a high quality of life for present and future generations of Americans

Natural resource management goals specifically adopted by MCAS Miramar are as follows:

- support the Marine Corps military mission by ensuring compliance with applicable environmental laws and regulations
- include natural resource management as a component of planning for execution of Marine Corps operational requirements
- identify and select opportunities for maintaining biodiversity, including conservation of important plants and animals
- secure regulatory agency and public recognition of Marine Corps environmental stewardship efforts

This chapter's purpose is to integrate the management and conservation of various natural resources components to support the military operational requirements of the Station. The objectives and planned actions presented in this chapter were developed and prioritized to support the Station's approach to natural resource management as discussed in Chapter 5 and planning needs as discussed in Chapter 6. MCAS Miramar's natural resource management program will seek appropriate funding and will set priorities based on the amount of funds actually received. Implementation of planned actions is a requirement of the revised Sikes Act Improvement Act of 1997, which directs the development, and implementation of INRMPs. Implementation of this INRMP will be measured only by the accomplishment of high priority planned actions, which are summarized in Table 7 at the end of this chapter. In all cases, the year the planned action is to be accomplished refers to the calendar year. This table is intended to assist those responsible for measuring and reporting INRMP implementation and success. The other planned actions are identified for implementation as funding permits and may be delayed for a year or more before such delay could cause a management problem.

The Environment and Safety Department, Natural Resources Division (NRD) for MCAS Miramar provides program management for natural and cultural resource compliance and management on the Station. This includes planning for and accomplishing established goals, objectives, and planned actions to support the ongoing military mission of the Station. Technical guidance is routinely provided regarding vegetation management, soil conservation, management of Special Status Species, wetland conservation, fish and wildlife management, outdoor recreation, cultural resource protection, and GIS data management. The NRD provides technical advice on both military and non-military NEPA documents, facility planning, construction plans, maintenance activities, military operations, and other proposed actions that may affect natural and cultural resources. Fieldwork, surveys, and inventories are accomplished through NRD managed contracts and cooperative agreements. These activities provide specific information on the flora and fauna present on MCAS Miramar and proactively maintain up-to-date resource data for activity and project planning, thereby minimizing resource data collection delays. However, the NRD does not have the available staff to conduct all fieldwork activities. The NRD serves as the lead for planning and addressing natural resource compliance issues such as wetland and endangered species regulatory requirements. The NRD also provides technical natural and cultural resource management support to Station action proponents regarding resource compliance requirements and BMPs involved with their actions. Conservation education training to military and civilian personnel is a constant focus of the NRD to raise awareness and improve community relations with the goal of preventing resource damage.

7.2 VEGETATION MANAGEMENT AND SOIL CONSERVATION

7.2.1 Overview

Watershed, floodplain, fuelbreak/fire management, grounds maintenance and landscaping, and soil conservation can all be viewed as components of vegetation management. Meeting the objectives of each of these components requires an integrated approach to vegetation management as well as the other natural resources components identified in this chapter. Special Status Species of plants, as well as animals, are addressed in Section 7.3.

Legislation and regulations relevant to vegetation management and soil conservation are summarized in Appendix A, and include the following:

- Small Watershed Protection and Flood Prevention Act (PL 84-566; Title 16 USC 1002)
- Federal Flood Disaster Prevention Act (PL 93-234)
- Federal Water Pollution Control Act Amendments of 1972 (PL 92-500)
- Noxious Plant Control Act (PL 90-583)
- Federal Noxious Weed Act of 1974
- Soil Conservation Act (Title 16 USC 5901 *et seq.*)
- Endangered Species Act
- Invasive Species (Executive Order 13112, 8 February 1999)

7.2.2 General Vegetation Management and Soil Conservation

Policy and Background

Effective vegetation management and associated soil conservation are critical to maintaining, restoring, and rehabilitating not only native vegetation but wildlife habitats as well. When vegetation management is focused on habitat improvement for wildlife, it can be a valuable management tool, and include maintenance of wildlife corridors and habitat linkages. An example of ongoing habitat maintenance on the Station is the informal policy of discouraging the removal of snags (standing dead trees) and logs. Whether left standing or laying on the ground these materials provide valuable wildlife habitat, generally for uncommon species. Soil erosion can severely delay the re-establishment of vegetation and the habitat conditions needed to sustain plant and wildlife species. This is of particular concern when Special Status Species habitat is the focus of habitat improvements.

In order to manage vegetation, it is valuable to quantitatively describe vegetative attributes such as cover, biomass, and composition. Carefully planned condition and trend monitoring, the objectives of which are periodically reviewed, is an effective means of learning about ecosystems. As such, an important objective of this INRMP is to develop and implement a program of Long-Term Ecosystem Monitoring (LTEM) of vegetation and soil conditions. This program will incorporate previously conducted vegetation and habitat monitoring, principally the Land Condition and Trend Monitoring Program previously implemented on the Station with assistance from San Diego State University's Geography Department. That effort resulted in a comprehensive description of vegetation at MCAS Miramar. Permanent transects were established and data collected.

The Marine Corps, as well as other federal agencies, must to comply with Executive Order 13112 of 8 February 1999 with regard to invasive species. Invasive species are defined as an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. An alien species is further defined as any species that is not native to a particular ecosystem. Federal agencies are to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species cause. Invasive plants can be a serious threat to natural plant communities. These species can change the structure of a plant community and degrade its value for wildlife and native plant species.

MCAS Miramar (as are all Marine Corps installations) is required to manage its lands to control and prevent soil erosion and to preserve natural resources by conducting surveys and implementing soil conservation measures. Erosion control is meant to preserve the integrity of soil productivity and function. It encompasses water quality concerns and protection of riparian functions that affect water quality. Altered or degraded landscapes, and associated habitats, are to be restored and rehabilitated whenever practicable (MCO P5090.2).

Highly erodible soils, small basins, and above normal fire risk throughout most of the year make erosion and sedimentation issues important at MCAS Miramar. Excess sediment or altered flows can affect watershed hydrologic function, water quality, and fish and wildlife habitat. Watershed malfunction that results in

excessive runoff can degrade or even destroy whole ecosystems, individual plant communities or specialized zones such as riparian areas along stream banks. Gullies can lower the water table, affecting potential vegetative cover and the entire hydrology of a watershed. Roads can alter water flow and potentially divert water from natural streams.

Restoration Project
Natural Resources Branch

A Soil Erosion Inventory of the Station was completed in 1991 . Of the 287 erosion sites described in this study, 51 were classified as active and 32 with minor activity. Almost three-quarters of the sites were natural landslides off eroded ridges in East Miramar. The greatest manmade erosion hazards on the Station are wide, unvegetated fuelbreaks without water diversion devices (Kellogg 1994).

Objective(s) and Planned Actions

The following are general vegetation management and soil conservation objectives and planned actions. High-priority planned actions also are listed in Table 7.

Objective I: Develop and implement a program for natural land and habitat restoration and rehabilitation.

High-Priority Planned Actions:

1. Continue exotic plant site identification and control efforts annually. Beginning in 2000, include physical removal of individual exotic plants, especially pampas grass (*Cortadria* spp.), tamarisk (*Tamarix* spp.), and arundo (*Arundo donax*) .

2. Establish a program for Natural Resource Damage Repair by 2001. Implement repair actions annually during year when damage was caused.

3. Complete USFWS and ACOE coordination and consultation on Natural Resource Damage Repair Program for endangered species habitat and wetlands by 2003.

4. Revise the Station plan for exotic plant control and removal, which prioritizes target species and sites for control, by 2004.

5. Complete a reevaluation and prioritization of active erosion sites identified in the 1991 Soil Erosion Inventory by 2005.

6. Update the vegetation mapping of MCAS Miramar by 2008. Minor updates will be performed more frequently as necessary.

7. Ensure that the natural resources staff member responsible for plant community and soil conservation obtains focused training regarding management of these resources as related to conservation on a military installation on an annual basis.

Other Planned Actions:

1. Continue to map eroded sites and implement soil erosion control measures based on priorities established by Station staff and revision of Soil Erosion Inventory. Emphasis will be on implementation of improved Station access routes in East Miramar to support military training and wildland fire management, significant soil loss, and important habitat restoration.

2. Work to reestablish the native seed collection agriculture outlease on the Station which, as part of the payment for access, will provide local native seed for use in restoration and rehabilitation projects.

3. Evaluate the use of prescribed burning to develop native grasslands on the Station while serving the purpose of fuel management in support of the wildland fire management program.

4. Evaluate the effects of prescribed burning on vernal pools and associated species.

5. Map locations of unique or rare plant species.

6. Develop specifications and standards for reseeding/revegetation of disturbed sites for use in contracts, maintenance, and other projects by 2002.

Objective II: Develop and implement a program LTEM of vegetation and soil conditions on the Station.

High-Priority Planned Actions:

1. Develop a consolidated program that incorporates all previously conducted vegetation/habitat monitoring transects by 2001.

2. Complete the first comprehensive sampling effort by 2002.

Other Planned Actions:

1. Conduct annual abbreviated monitoring of LTEM plots.

2. Install special purpose LTEM plots, as appropriate to address specific management concerns on the Station.

3. Complete the second comprehensive sampling effort by 2008.

7.2.3 Watershed and Floodplain Management

Policy and Background

Watershed management is intended to preserve soil and water productivity and function. Erosion and water quality management approaches on MCAS Miramar will be in agreement with the BMPs approved by the State of California under the Non-Point Source Pollution Control Plan. The natural pattern of water flow has been significantly altered on MCAS Miramar over the last century. In some cases, altered flows can increase soil erosion. The impact that this alteration may have on riparian cover and diversity, non-point source pollution, and water supply have yet to be described.

Effective watershed management can also be achieved through fire management, erosion control programs, and assessing the impacts of surface runoff into watersheds. Maintaining riparian vegetation cover through exotic removal and fire protection are watershed management actions that would contribute to water quality by preventing siltation into streambeds; for example, minimizing any new surface drainage into canyons.

As it implements land management, construction, and land use actions, the Marine Corps is to provide leadership in avoiding direct or indirect development of floodplains and in restoring and preserving the natural and beneficial values served by floodplains as required by Executive Order 11988, May 24, 1977 (refer to Appendix A). Marine Corps installations are to evaluate the potential effects of actions in floodplains in order to provide an early opportunity for public review of proposals in floodplains according to NEPA procedures (MCO P5090.2A).

Objective(s) and Planned Actions

The following are watershed and floodplain management objectives and planned actions. High-priority planned actions also are listed in Table 7.

Objective I: Maintain watershed productivity, quality, and functioning through an effective non-point source pollution control program (soil erosion control and maintenance of vegetative cover). Seasonal distribution of water availability, minimization of flooding, reduced sedimentation, and maintenance of wetland quality will receive emphasis in performing planned actions in other compatible management areas (see General Vegetation Management and Soil Conservation and Fuelbreak/Fire Management).

Objective II: Minimize potential impacts of flooding on high value resources by collecting and providing information on floodplain and wetland location during planning process.

High-Priority Planned Actions:

1. Delineate and map for GIS the 100-year floodplains on MCAS Miramar by 2002.

Other Planned Actions:

1. Identify and prioritize susceptibility of high value resources located in floodplains and potential options to minimize adverse impacts on both human and natural resources.

7.2.4 Wildland Fire Management

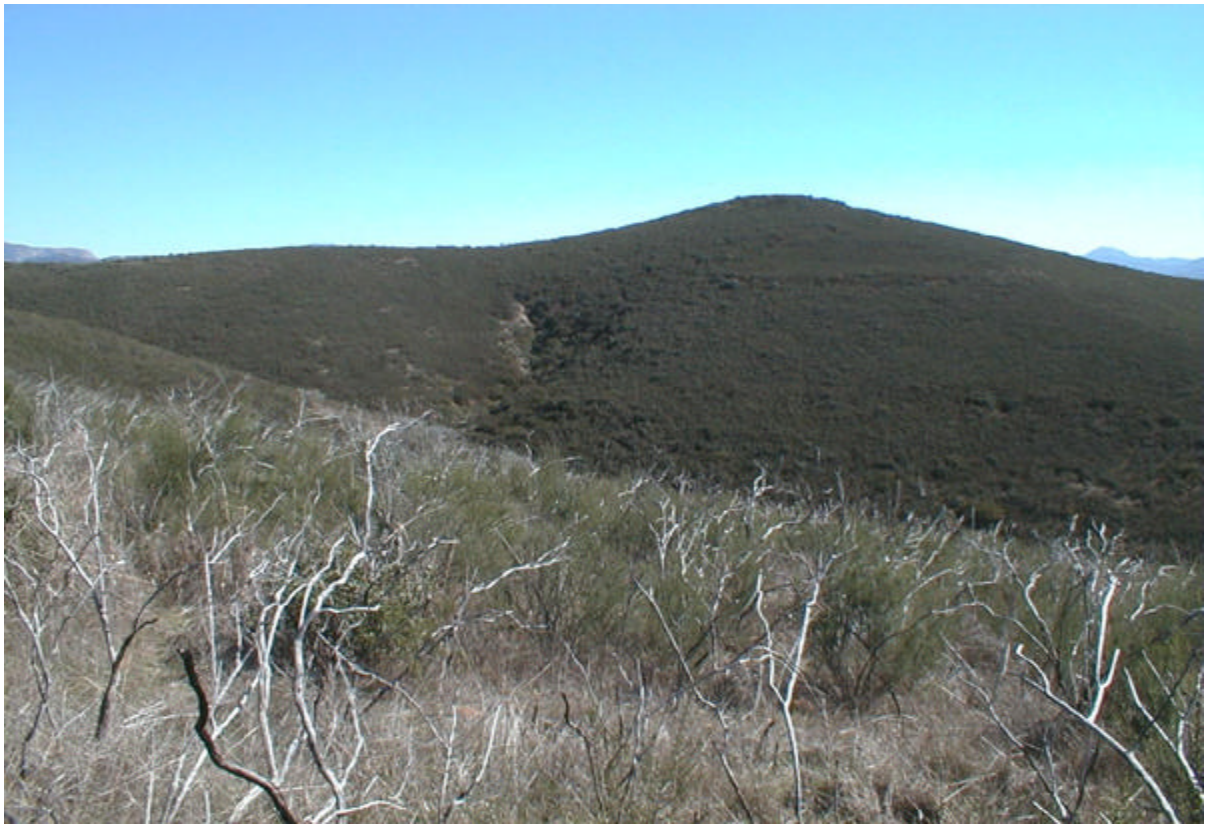
Policy and Background

The primary reason for fire management at the Station is the protection of human life, health, and property. Managing wildland fire also aids in preventing catastrophic loss of wildlife habitat and vegetative cover which helps maintain the watersheds and, thereby, water quality. Risks from uncontrolled wildfire come from potential ignition sources both on and off the Station. Management is necessary to support emergency response control efforts in an attempt to prevent a catastrophic wildfire which can cause significant loss of high value resources, both human and natural. The MCAS Miramar Fire Department is responsible for fire management on the Station. Wildland fire managers for the Fire Department work with both the Public Works Department and Environment and Safety Department to carry out maintenance and construction of fuelbreaks, firebreaks, and access roads.

The management of vegetation to meet fire management needs and soil/vegetation conservation will be evaluated jointly between wildland fire managers and the Station's natural resource specialists. Ideally, plans and actions should be directed to avoid grading or blading the soil beyond maintenance of an access road width with the remainder maintained by vegetation crushing or mowing, perhaps following an initial clearing treatment such as prescribed burning or grading. Where vegetation is cleared down to mineral soil on steep slopes, water bars or other diversion structures need to be placed at regular intervals to minimize soil erosion. Where prescribed burning is determined to be the best method of vegetation management for wildland fire management, the Fire Department will accomplish necessary coordination and subsequent burning activities. Maintenance of existing fuelbreaks, firebreaks, and fire access roads where there is no expansion beyond the existing impact footprint should attain NEPA compliance by use of a Categorical Exclusion and would require no additional environmental documentation. Actions which must expand beyond existing footprints of managed fuel/firebreaks will require natural resource impact assessment and further NEPA documentation. This discussion is specific to the maintenance of established fuelbreaks, firebreaks, and access roads used primarily for wildland fire management. Other access roads should be addressed separately based on their primary purpose.

The approach to fire management at MCAS Miramar has been to manage fires with fuelbreaks and prescribed fire. A prescription is written that articulates specific objectives for burns. Between 1989 and 1990 over 1,000 acres of brush were control-burned. Additional fuel modification has occurred as a result

of burning since 1990. Prescribed burns have been conducted and wildfires have accomplished some of the fuel management objectives. More recent fires (i.e., 1990 to the present) have occurred in the easternmost portion of the Station, east of Green Farms. Roughly half of this area has burned since 1990.



Fire can have a positive impact on native vegetation and wildlife habitat. Fire management helps maintain ecological diversity by fostering a mosaic of successional stages and age classes of vegetation types. The primary benefit of patchy mosaics to fire control is to lower the age class of vegetation, thereby lessening fuel load and buildup of the duff layer. The resulting fire pattern is one of more frequent, small fires instead of the high risk of a large, disastrous fire. While fires are frequent on MCAS Miramar (i.e., approximately every 3-5 years), fire in any one area is typically much less frequent (i.e., approximately every 20 years or more). Many benefits to wildlife accrue from this, beside fire protection. These include improved edge effects, water yields, and reduced erosion. Better understanding of the effects of fire on vegetation and wildlife habitat can come from tracking and monitoring the effects of fuel load modifications, prescribed burns, and wildfires.

The Station currently has a Fuelbreak Management Plan (NAS Miramar 1992) which is planned for revision by 2000, once an EA is completed to re-evaluate the vegetation management part of the Station's wildland fire management program. This EA is planned for completion in time for implementation in 1999. The 1992 plan covers the evaluation of existing fuelbreaks, including the removal and restoration of some; means to revegetate fuelbreaks by natural and manual means; fuelbreak maintenance standards and requirements; construction of waterbars; improving access and wildfire control response time; and

prescribed burning to reduce fuels on fuelbreaks. The plan describes the average fuelbreak on MCAS Miramar as 120 feet wide (to vary by slope), composed of 20 feet for a fuelbreak road and 100 feet (50 feet on each side) of strips revegetated with native grasses and chaparral shrubs to reduce erosion and provide a aesthetic appearance (NAS Miramar 1992).

Objective(s) and Planned Actions

The following are wildland fire management objectives and planned actions. High-priority actions also are listed in Table 7.

Objective I: Support a Wildland Fire Management Program to protect high value human and natural resource areas from catastrophic wildfire while conserving resources and military operational flexibility.

High-Priority Planned Actions:

1. Develop a set of programmatic instructions/guidelines in coordination with the MCAS Miramar Fire Department of use during wildfire suppression activities and institute a natural resource advisor program using existing staff to assist Incident Commanders with natural resource conservation issues by 2001.

2. Prepare jointly with the MCAS Miramar Fire Department, Standard Operating Procedures for annual maintenance the Station's fuelbreaks, firebreaks, and access roads by 2001.

3. Provide natural resource technical services to the MCAS Miramar Fire Department to support their planning for the conduct of highest priority fuel modification actions, including prescribed burning and improved access, by 2003.

4. Develop procedures for habitat restoration from fire and fire suppression caused damage, by 2005.

Other Planned Actions:

1. Assist the MCAS Miramar Fire Department with preparation of a Wildland Fire Management Plan.

2. Initiate restoration of fuel/firebreaks and roads, which are no longer needed to support the MCAS Miramar Wildland Fire Management Plan or other operational needs of the Station, as funds become available.

3. Provide wildland fire management training to natural resources staff responsible for supporting wildland fire management on the Station. At least one staff member should have received such training at all times. Ensure that basic Fire Shelter training is provided to natural resource staff who may serve as natural resource advisors in response to controlled burn and wildfire suppression activities.

4. In cooperation with the MCAS Miramar Fire Department, complete an EA for a vegetation management program for wildland fire management and natural resource conservation to identify the approach to managing wildland fire hazards which best suits MCAS Miramar needs by 2001.

5. Complete needed natural resource based regulatory agency coordination on the preferred wildland fire management approach identified through the EA process.

Objective II: Track and monitor the effects of fuel modifications to support hazardous fuel reduction actions in strategic areas of MCAS Miramar and enhance/maintain native plant diversity and improve wildlife habitat.

High-Priority Planned Actions:

1. Maintain up-to-date GIS mapping of prescribed/controlled burns and wildfires by mapping each prior to the subsequent growing season.

2. Develop a fuel loading report to support fire management planning that identifies high hazard areas by 2002.

3. Develop a vegetation age class distribution map of the Station that shows levels of fuel loading using the GIS by 2003.

Other Planned Actions:

1. Develop a procedure to document prescribed/controlled, and wildfire contribution to the Wildland Fire Management Plan objectives for fuel modification and management.

2. Establish LTEM plots in representative controlled burns and wildfires as special purpose plots to monitor the long-term effects to vegetation and soil conservation.

3. Annually update fuel load hazard mapping.

7.2.5 Grounds Maintenance and Landscaping

Policy and Background

Grounds maintenance and landscaping includes considerations for weed control and urban forestry. It is Marine Corps policy that environmentally and economically beneficial landscaping practices be used. These practices are outlined in a Memorandum for Heads of Executive Departments and Agencies issued by the President (Presidential Memorandum) dated 26 April 1994. The Presidential Memorandum directs federal agencies to use landscaping techniques that enhance the local environment and minimize the adverse effects

that landscaping can have on the environment. The Presidential Memorandum stresses use of regionally native plants and practices that conserve water and prevent pollution. Integrated measures include reducing use of fertilizers, pesticides, and water use for both economic and environmental benefits. With regard to the control of noxious weeds, Marine Corps installations are to cooperate with state programs for controlling noxious plants. MCAS Miramar will allow access for that control, provided it is consistent with installation safety and security considerations and that control measures are acceptable and have been followed on privately owned lands (MCO P5090.2). Grounds maintenance activities will be integrated with fire management with respect to clearing around buildings.

In many locations on MCAS Miramar, species protected by the ESA occur in the immediate vicinity of developed areas. Persons should consult with the Station NRD staff prior to clearing natural vegetation. Persons should also coordinate with the NRD staff prior to tree/brush trimming and removal during the breeding season of birds to ensure that they do not remove limbs/trees that support active bird nests (refer to Section 7.5.3). Pesticide application must be coordinated with the Station pesticide management coordinator and should be part of an integrated pest management approach (refer to Section 7.5.5). Persons responsible for mowing around the runways and parking aprons should be aware that, in many locations, there are Special Status Species in the immediate vicinity of the runways. This is particularly true in the case of venal pool basins and watersheds that support such species. Mowing the taller grasses around the runways tends to attract birds that can become a Bird and Animal Air Strike Hazard (BAASH). This circumstance requires that special planning be done to avoid or minimize damage to Special Status Species and that BAASH hazards are kept at a minimum. The flight line mowing program has been coordinated with the USFWS and the resultant requirements have been placed in the Station BAASH Order (refer to Section 7.5.4).

Objective(s) and Planned Actions

The following are grounds maintenance and landscaping objectives and planned actions. High-priority actions also are listed in Table 7.

Objective I: Ensure that grounds maintenance and landscaping operations are consistent with natural resource goals and objectives.

High-Priority Planned Actions:

1. Ensure that personnel in charge of Station landscaping plans have been provided with a copy of the Presidential Memorandum (26 April 1994) directing the use of native and adapted plant materials and a list of invasive plants which should not be planted by 2001. The Exotic Pest Plant Council and CNPS have developed lists of plants which are capable of invading natural areas.

2. Review and recommend changes to the Station landscaping plans for compliance with Presidential Memorandum directing the use of native and adapted plant materials and delete plants with the potential to escape from landscaped areas by 2002.

3. Use exotic plant control program to control spread of exotic landscaping plants into natural areas. Integrate into exotic plant control program by 2003.

4. Review and revise the flightline mowing program standard operating procedures to maintain consistency with BAASH program and vernal pool endangered species management requirements by 2005.

Other Planned Actions:

1. Always discourage the use of invasive exotic plants, such as those listed by the Exotic Pest Plant Council and CNPS, for landscaping.

2. Map exotic plant locations to track spread and control success over time.

7.3 MANAGEMENT OF SPECIAL STATUS SPECIES

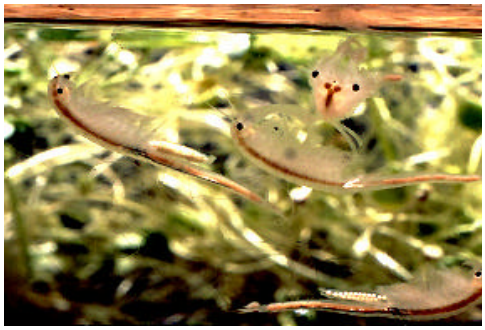
7.3.1 Policy and Background

Special Status Species include those that are federally listed as endangered or threatened, or are proposed or candidates for such listing (refer to Table 1). Definitions for categories of Special Status Species are provided in Section 4.6. MCAS Miramar's approach to Special Status Species is to proactively collect information on presence or absence, location, habitat availability and suitability, and life history requirements. This information is collected to develop management response contingencies to support planning for military operational requirements and habitat conservation.

MCAS Miramar consults with the USFWS (as appropriate) to ensure that Marine Corps actions are not likely to jeopardize the continued existence of any endangered or threatened species in compliance with sections 7 and 9 of the ESA. Pursuant to Section 7 of the ESA, federal agencies such as the Marine Corps must consult with USFWS if their action "may affect" a federally listed endangered or threatened species (50 CFR 402). Such consultations may be formal or informal.
When necessary, MCAS Miramar prepares a biological assessment of the effects of a proposed action on listed species, as required by Section 7 of the ESA, which serves to conserve endangered and threatened species (MCO P5090.2). Section 9 of the ESA prohibits the Atake@ of a threatened or endangered species. A take includes the direct killing, harming, or harassing of a species, or destruction of habitat that may be important for the species' survival or recovery.

For some federally listed species, critical habitat has been designated. However, while MCAS Miramar has habitats important for the survival of federally listed species, such as the coastal California gnatcatcher, no critical habitat has been designated on the Station.

Other Species of Special Regional Concern at MCAS Miramar have been defined to include former candidates for federal listing as threatened or endangered, species of concern to the state of California, and species that are regionally rare or of limited distribution (refer to Table 2). These species, and their habitats, are considered as part of MCAS Miramar's general vegetation and wildlife management program.



Fairy Shrimp Natural Resources

Regulatory requirements relative to the ESA are further summarized in Chapter 6 as well as in Appendix A.

7.3.2 Objective(s) and Planned Actions

The following are Special Status Species management objectives and planned actions. High-priority planned actions also are listed in Table 7.

Objective I: Proactively maintain up-to-date presence/absence, distribution, and habitat data for all Special Status Species, to support project and activity planning, management, and implementation on MCAS Miramar.

High-Priority Planned Actions:

1. Initiate focused surveys for federally proposed and listed threatened and endangered species for which the absolute presence on MCAS Miramar has not definitively been determined by 2001. Currently, these species include:

   San Diego Thornmint (*Acanthomintha ilicifolia*) - Threatened
   Del Mar Manzanita (*Arctostaphylos glandulosa* var. *crassifolia*) -Endangered
   Encinitas Baccharis (*Baccharis vanessae*) - Threatened
   Orcutt's Spineflower (*Chorizanthe orcuttiana*) - Endangered
   Southwestern Willow Flycatcher (*Empidonax traillii extimus*) - Endangered

2. By 2001, develop a prioritized list of Special Status Species monitoring actions necessary to maintain a sufficiently up-to-date information database, thereby minimizing needs for project-by-project, action-by-action survey requirements for EA actions and ESA compliance. No species distribution data should be older than three years. (Data will be mapped whenever such species are encountered during fieldwork.)

3. Evaluate the feasibility then, if feasible, implement a program for determining the presence/absence of endangered San Diego and Riverside fairy shrimp for each vernal pool on higher priority areas of MCAS Miramar.

a. Evaluate the feasibility and utility of determining the presence/absence of endangered fairy shrimp in high priority areas by 2002.

b. Develop a prioritized list of vernal pool areas for surveys by 2003.

c. Initiate surveys in highest priority vernal pool areas by 2004.

d. Initiate surveys in remaining high priority vernal pool areas by 2006.

4. Initiate Special Status Species monitoring to maintain an up-to-date database in support of EA actions and ESA compliance for planning and management for all listed and proposed species no later than 2001.

Other Planned Actions:

1. If determined to be useful, implement a program for determining the presence/absence of endangered San Diego and Riverside fairy shrimp for each vernal pool on lower priority areas of MCAS Miramar.

   a. Initiate surveys in medium priority vernal pool areas by 2007.
   b. Initiate surveys in lower priority vernal pool areas by 2009.

2. Program for focused species surveys, in conjunction with above actions were possible, to determine the presence/absence and distribution on the Station for species with a high likelihood of being proposed for listing as threatened or endangered in the very near future.

Objective II: Monitor and manage regionally rare species to demonstrate conservation of MCAS Miramar populations under the management approach described in this INRMP (see Chapter 5).

High-Priority Planned Actions:

1. Use various media to create and maintain awareness of Station personnel, general public, and lease and easement holders of the sensitivity, values, and obligations regarding the conservation of Special Status Species and their habitat. This may include presentations, briefs, newspaper articles, special messages, and an informational brochure. Ongoing.

2. Develop procedure for modifying MA boundaries to accommodate any necessary focused management of a species not adequately conserved by current MAs by 2003.

3. Ensure that all natural resources staff responsible for Special Status Species management receive focused training regarding species under their primary areas of responsibility on a regular basis. Repeated training for any individual species should be accomplished at least once every three years.

Other Planned Actions:

1. Develop a prioritized list of CNPS rare species that occur on MCAS Miramar by 2002.

2. Develop a monitoring program for species of regional concern on the Station with a specific focus on those species likely to become proposed for listing as threatened or endangered in the near future. The program will be ready for implementation of initial surveys no later than 2001.

Objective III: Assess and pursue the development of conservation agreements and/or programmatic Section 7 ESA consultation with USFWS to provide compliance with sections 7 and 9 for Station actions.

High-Priority Planned Actions:

1. Assess the utility of completing a programmatic consultation to provide compliance for unintended and accidental potential effects to threatened and endangered species from ongoing military operational requirements, fire management, and natural resource management actions by 2002.

2. Conduct a programmatic consultation to provide compliance for unintended and accidental potential effects to threatened and endangered species from military operational requirements, fire management, and natural resource management actions by 2004. The outcome would be an annual provision of incidental take authorization ongoing activities and restoration actions.

3. If feasible, complete a programmatic consultation which addresses new projects and requirements which have the potential to affect threatened and endangered species by 2007. The outcome would provide a programmatic approach to assessing and compensating for actual impacts to listed species along with appropriate incidental take authorizations.

Objective IV: Monitor to ensure ESA Section 7 compliance for projects implemented or actions taken as set forth in existing Biological Opinions.

High-Priority Planned Actions:

1. Develop a comprehensive list of commitments and Terms and Conditions contained within the numerous formal and informal consultation documents issued to apply on the Station. Commitments will be divided into those for which the Marine Corps, DoD, and non-DoD agencies have agreed to by execution of proposed actions. This shall be completed by 2002.

2. Ensure the execution of commitments and Terms and Conditions contained within formal and informal consultation documents issued to apply on the Station for which the Marine Corps or another DoD agency have agreed to by execution of proposed actions. Completion dates will vary based on the specific issue.

3. Monitor the execution of commitments and Terms and Conditions contained within formal and informal consultation documents issued to apply on the Station for a non-DoD agency proposed actions. Completion dates will vary based on the specific issue.

7.4 VERNAL POOL AND OTHER WETLANDS MANAGEMENT

7.4.1 Overview

This section addresses vernal pools and other wetlands at MCAS Miramar which are described in greater detail in Chapter 4. Other wetlands include vernal marshes, fresh water marshes, and portions of some riparian vegetation types, and edges of open water ponds. Management and use of these areas requires careful consideration of the CWA, ESA, and the national policy (Executive Order 11990) to permit no overall net loss of wetlands.

Legislation and regulations relevant to vernal pool and other wetlands management summarized in Chapter 6 and Appendix A include the following:

- Clean Water Act of 1977 (including Regional General Conditions)
- Protection of Wetlands (Executive Order 11990, 24 May 1977)
- Endangered Species Act
- Fish and Wildlife Coordination Act of 1980
- Floodplain Management (Executive Order 11988, 24 May 1977)

7.4.2 Vernal Pool Management

Policy and Background

Relevant documents to the management of vernal pools at MCAS Miramar include the NAS Miramar Vernal Pool Management Plan (Bauder and Wier 1991), NAS Miramar Comprehensive Natural Resources Management Plan (Kellogg 1994), and *The Ecology of Southern California Vernal Pools* by Zedler (1987). The contents of the management plans will be updated and revised to be included as part of this INRMP at a later date. All vernal pools identified on MCAS Miramar were assigned a group designation in 1991 by the NAS Miramar Vernal Pool Management Plan (Bauder and Wier 1991) following the system of vernal pool units and groups developed by Beauchamp and Case (1979) for San

Vernal Pool *Natural Resources Division*

Diego County as supplemented by Bauder (1986). Current management unit designations are presented on Figure 10 (refer to Chapter 4).

High-priority items for vernal pool management are to (1) develop procedures to respond and fix accidental impacts to vernal pools and endangered species; (2) pursue a programmatic consultation with the USFWS based on procedures developed in 1992; (3) develop and post signs in vernal pool management areas using current priorities relative to high, moderate, and low use areas; (4) install fencing in vernal pool groups; and (5) work with lessees and right-of-way holders to identify potential impacts their activities could have to vernal pools and other resources. Compatibility of uses within Level I MAs are also discussed in Chapter 5. The vast majority of vernal pool basins and watersheds are encompassed within Level I MAs on MCAS Miramar in order to highlight them for management and conservation. Protection of vernal pools has been given the highest management priority at MCAS Miramar. Management recommendations have been, and continue to be, developed to prevent the degradation or destruction of vernal pools.

The Special Status Species dependent on vernal pools at MCAS Miramar are described in Section 4.6. The San Diego button-celery (*Eryngium aristulatum* var. *parishii*), California Orcutt grass (*Orcuttia californica*), San Diego mesa mint (*Pogogyne abramsii*), Riverside fairy shrimp (*Streptocephalus woottoni*), and San Diego fairy shrimp (*Branchinecta sandiegonensis*) are listed as endangered; and the spreading navarretia (*Navarretia fossalis*) is listed as threatened.

San Diego Mesa Mint Natural

Objective(s) and Planned Actions

The following are vernal pool management objectives and planned actions. High-priority planned actions also are listed in Table 7.

Objective I: Take proactive action to prevent damage to vernal pools.

High-Priority Planned Actions:

1. Use various media to create and maintain awareness of Station personnel, general public, and lease and easement holders of the sensitivity, values, and obligations regarding the conservation of vernal pools and their watersheds. This may include presentations, briefs, newspaper articles, special messages, informational brochure, interpretive signs, and strong support for a Station ethic of restricting off-road vehicle activities. Ongoing.

2. Ensure that the MCAS Miramar Ground Training Order, when revised, contains information and measures to minimize damage to vernal pools by units training on the Station. Conversion of NAS Miramar to MCAS Miramar instruction to be completed by 2001.

3. Place field markers, signs, or fencing around vernal pool groups with a higher susceptibility for damage to prevent accidental and/or unintentional damage.

    a. A prioritized list of vernal pool susceptibility to accidental damage developed by 2001.
    b. Vernal pools with the highest likelihood for accidental damage marked starting in 2002.
    c. Vernal pools with a high likelihood for accidental damage marked starting in 2004.

4. Incorporate the key elements of the 1991 Vernal Pool Management Plan into this section of the INRMP for the next revision by 2007.

5. Ensure that the natural resource staff member with primary responsibility for managing vernal pools on the Station receives focused training on vernal pool biology, management, policy, and regulatory procedures annually.

Other Planned Actions:

1. Work continuously with project and activity planners to avoid or minimize impacts to vernal pools early in the planning process using the conservation approach identified in Chapter 5 as an initial planning tool to avoid areas containing a high density of vernal pools (Level I MAs).

2. Work with Lessees and right-of-way holders to identify potential impacts their activities could have to vernal pools and other resources.

3. Design an alternate trail for educational field tours at the Miramar National Natural Landmark that avoids or further minimizes damage to vernal pools and associated rare and endangered species.

4. Design and develop a permanent vernal pool public education and interpretive display for public education on the Main Station area.

5. Place field markers, signs, or fencing around vernal pool groups with a lower susceptibility for damage to prevent accidental and/or unintentional damage.

a. Vernal pools with a moderate likelihood for accidental damage marked starting in 2006.
b. Vernal pools with the lower likelihood for accidental damage marked starting in 2008.

Objective II: Develop and maintain high-quality and up-to-date GIS mapping of vernal pools and their watersheds that supports proactive planning and impact avoidance.

High-Priority Planned Actions:

1. Complete mapping of vernal pool basins for the GIS to sub-meter accuracy with a GPS according to the following schedule:

    a. Management units with a higher potential for damage or development by 2002.
    b. Management units with moderate potential for damage or development by 2005.
    c. Management units with low potential for damage or development by 2007.

2. Update mapping of vernal pool watersheds for the GIS to a more exact and accurate coverage with a GPS unit according to the following schedule:

    a. Management units with a higher potential for damage or development by 2003.
    b. Management units with moderate potential for damage or development by 2006.
    c. Management units with moderate potential for damage or development by 2008.

Other Planned Actions:

1. Establish photographic plots for each vernal pool group to help monitor changes over time by 2003.

Objective III: Implement a program for vernal pool restoration and creation to maintain no net loss of vernal pool basin resources.

High-Priority Planned Actions:

1. Develop procedures to respond to and repair accidental damage to vernal pools and associated threatened and endangered species by 2002.

2. Pursue a programmatic CWA Section 404 Permit from the ACOE for repair of accidental damage to vernal pool wetlands and accomplish associated ESA Section 7 consultation with the USFWS to support such actions by 2003.

3. Ensure the completion of BRAC mitigation measures for impact avoidance, minimization and compensation as committed to by the DON by 2006.

Other Planned Actions:

1. Establish a vernal pool exotic plant control/removal project.

7.4.3 General Wetlands Management

Policy and Background

MCAS Miramar supports wetlands other than the vernal pools addressed above, including vernal marshes, fresh water marshes, and portions of some riparian vegetation types and edges of open water ponds. As is the case with vernal pools, management and use of these areas requires careful consideration of the CWA, ESA, and the national policy (Executive Order 11990) to permit no overall net loss of wetlands.

Objective(s) and Planned Actions

The following are general wetlands management objectives and planned actions. High-priority planned actions also are listed in Table 7.

Objective I: Identify and manage wetlands on MCAS to maintain no net loss of wetland values.
High-Priority Planned Actions:

1. Ensure that all natural resources staff responsible for wetlands conservation have obtained formal wetlands delineation training by 2002 and that at least one staff member has received this training at all times.

2. Ensure compliance with Section 404 Clean Water Act permits issued by the ACOE to (1) ensure compliance with permits issued for DoD actions on the Station; and (2) to monitor the execution of special conditions of permits issued to non-DoD agency proposed actions. Ongoing.

3. Prepare a GIS wetlands mapping coverage for MCAS Miramar that supports proactive planning and impact avoidance.

    a. Accomplish an assessment of the ability to use wetland vegetation type and vernal pool mapping to serve as the tool for managing wetlands and meet the wetlands inventory requirements by 2002.

    b. Based on the findings of the assessment, complete a wetlands inventory necessary to meet wetland inventory requirements by 2004.

Other Planned Actions:

1. Identify candidate sites for future wetland mitigation to compensate for unavoidable wetland value losses.

2. Identify and provide for wetlands regulatory and policy training for natural resources staff members with primary responsibility for wetland conservation on the Station.

3. Develop an assessment of and apply for a programmatic general permit for maintenance of road crossings, culverts, and bridges through wetlands and flood prevention actions to bring drainage maintenance into compliance with the CWA.

7.5 FISH AND WILDLIFE MANAGEMENT

7.5.1 Overview

Fish and wildlife management is defined by the Marine Corps as "A coordinated program of actions designed to preserve, enhance, and regulate indigenous wildlife and its habitats, including the conservation of protected species and non-game species, management and harvest of game species, reduction in bird air strike hazard (BASH), and animal damage control" (MCO P5090.2A). At MCAS Miramar, BASH is considered along with animal air strike hazard and referred to as BAASH. Topics included in this section include general wildlife management, migratory bird management, wildlife damage management (including BAASH), and integrated pest management. Pest management is included since it has potential effects on fish and wildlife, particularly the application of pesticides. Special Status Species of wildlife are addressed separately in the previous section.

Legislation and regulations relevant to fish and wildlife management are summarized in Appendix A and include the following:

- Bald Eagle Protection Act
- Sikes Act of 1960 - Conservation Programs on Military Reservations Act
- Sikes Improvement Act of 1997
- Endangered Species Act
- Fish and Wildlife Conservation Act of 1980
- Fish and Wildlife Coordination Act of 1980 (PL 85-624, Title 16 USC 2901 *et seq.*)
- Migratory Bird Treaty Act of 1918, as amended (Title 16 USC 703 *et seq.*)
- Military Reservation and Facilities: Hunting, Fishing and Trapping Act of 1958 (PL 85-337, Title 10 USC 2671)

7.5.2 General Wildlife Management

Policy and Background

It is believed that proper vegetation management (e.g., watershed management, fuelbreak/fire management) will protect the viability of all wildlife populations on MCAS Miramar. All species of wildlife will benefit from MCAS Miramar's basic strategy to limit activities, avoid development, and perform mitigation actions in areas supporting high densities of predominantly vernal pools, threatened or endangered species, and other wetlands. Further, the basis of good management is an understanding of the diversity, abundance, distribution, population dynamics, and habitat requirements of species. This approach is reflected in the Station's past and ongoing biological studies. These studies include monitoring of neotropical migrant birds, arthoropod surveys, lepidoptera surveys, bat surveys, herpetological surveys, and mule deer surveys, to name only a few.

While no native game fish species occur on MCAS Miramar, a few ponds have been managed for game fish as part of a recreational fishery. Game fish species recorded as having been stocked on Miramar include largemouth bass, rainbow trout, channel catfish, bluegill, and red-eared sunfish (USFWS 1992b).

Wildlife game species at MCAS Miramar include California quail (*Callipepla californic*a), mourning dove (*Zenaida macrour*a), desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus*), brush rabbit (*Sylvilagus bachmani*), coyotes (*Canis latrans*), bobcat (*Lynx rufus*), waterfowl, and southern mule deer. Although there is currently no hunting at MCAS Miramar, upland game species populations of deer, quail, rabbits, doves, coyotes and possibly bobcats, are sufficiently abundant to support a recreational hunting program. Other than recreational fishery management at the Fish Pond, deer, quail, and dove hunting opportunities have received the most attention and interest on the Station. The deer population on East Miramar in 1986 was estimated at 100 to 150 animals (Hannon 1987). More recent spotlight surveys conducted up through 1999 by the Station, show a similar deer population as still present. Quail surveys, also conducted on the Station in 1986, estimated the quail population at 900 to 2,500 on East Miramar (Hannon 1987). Subsequent follow-on quail surveys conducted in 1989 showed that quail were still abundant. The mourning dove population on East Miramar in 1986 was estimated at about 500 (Hannon 1987). Coyote surveys conducted in fall 1995 estimated densities of 4.1 coyotes per square kilometer for East Miramar and 2.3 in West Miramar, noting that densities were equal to the highest published densities in North America (Mason 1998). Management practices benefiting these game species include providing additional water sources, controlled burns, brush management, food plantings, and population inventories. Evaluation of the feasibility and implementation of hunting and fishing programs is discussed in the following section addressing Outdoor Recreation (7.6).

Owl Box *Natural Resources Branch*

Objective(s) and Planned Actions

The following are general wildlife management objectives and planned actions. High-priority planned actions also are listed in Table 7.

Objective I: Maintain healthy wildlife populations as a component of the ecosystem.

High-Priority Planned Actions:

1. Establish general wildlife population trend monitoring program as component of long-term ecological trend monitoring program as funding becomes available.

2. Ensure that the natural resources staff member responsible for wildlife management and conservation obtains focused training regarding management of these resources as related to conservation on a military installation on an annual basis.

Other Planned Actions:

1. Maintain and supplement existing drinking water availability including use of guzzlers and small earthen dams.

2. Identify controlled burn or other brush management areas which will be valuable for maintaining or enhancing mosaic and diversity of vegetative age classes and enhance wildlife diversity. This should be planned in a way to compliment the Miramar Wildlife Fire Management Plans (refer to Fuelbreak/Fire Management section).

3. Evaluate the feasibility and desirability of removing non-native species from aquatic ecosystems in accordance with the NonIndigenous Aquatic Nuisance Prevention and Control Act of 1990.

4. Map locations of significant animal sightings as encountered on the station.

7.5.3 Migratory Bird Management

Policy and Background

The primary consideration with regard to migratory birds is compliance with the MBTA. Except as permitted, actions may not result in pursuit, hunting, taking, capture, killing, possession, or transportation of any migratory bird, bird part, or nest of any species listed in 50 CFR 10.13. Marine Corps installations must apply for depredation permits for those actions with the primary intent to kill migratory birds, their young, or eggs. The lawful pursuit of migratory game birds is permitted in compliance with federal, state, and local hunting regulations (MCO P5090.2A). Currently, no hunting or trapping is allowed at MCAS

Miramar.

The MBTA is an international agreement between the United States, Canada, and Mexico that protects designated species of birds. All birds are protected under the act, with some exceptions. Birds classified as migratory also includes species that occupy MCAS Miramar throughout the year. The MBTA controls the taking of these birds, their nests, eggs, parts, or products. The MBTA states that it is unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, attempt to capture, or attempt to kill, purchase, offer to purchase, deliver for shipment, ship, export, import, cause to be shipped, deliver for transport, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, possess, offer for sale, sell, offer to sell, barter, offer to barter, any migratory bird, any part, nest, or egg of any such bird, or any part, nest, or egg thereof; unless and except as permitted by regulations in the MBTA.

All persons, organizations, and agencies, are liable for prosecution for violations and must follow permitting requirements for taking migratory birds. Special purpose permits may be requested and issued that allow for the relocation or transport of migratory birds for management purposes.

The following considerations relative to migratory bird management will be addressed in greater detail in revisions to this INRMP:

- Nuisance bird problems: Exclusion of nuisance birds is the preferred method; the Environment and Safety Department can provide technical support to those needing assistance. Installation and materials for such exclusion will be the responsibility of the party with the problem. Unfortunately, exclusion is not always completely effective.

- The potential beneficial effects of owls inhabiting aircraft hangers will be researched (literature review). Since owls are nocturnal, they are much less of a BAASH concern than other species, and they may prevent or reduce the presence of other birds and rodents from inhabiting hangars. Most other birds, since they are active during daylight hours, are a greater BAASH concern. A study conducted at NAS Lemoore will be reviewed for its relevance.

- Injured and nuisance birds (refer to Section 7.5.4).

- Construction and Maintenance: The approach will be to coordinate with those scheduling and performing construction and/or maintenance. Wording in all contracts and work orders will explain the law, and that it applies to all persons (not just federal agencies). It will be emphasized that a contract or work order does not authorize, encourage, or condone violation of the law and workers are expected to comply. The Environment and Safety Department can provide contracting language for inclusion in all contracts prepared for or to be implemented on MCAS Miramar to avoid loss or additional cost to the government for contract delay as a result of MBTA.

MCAS Miramar participates in the international Partners in Flight (PIF) program through establishing and maintaining Monitoring Avian Productivity and Survivorship (MAPS) stations. MCAS Miramar supports DOD's policy for integrating neotropical migratory bird management into existing natural resource and land management programs consistent with the military mission. The PIF program is the larger network of federal, state, and non-governmental organizations of which DoD is an important participant. The objective of the MAPS program is to contribute to an integrated bird monitoring system for North America. A wide variety of biological data are collected on neotropical birds at the stations. Maintenance of funding to continue the PIF program at the Station is uncertain due to competing, higher funding priorities.

Objective(s) and Planned Actions

The following are migratory bird management objectives and planned actions. High-priority planned actions also are listed in Table 7.

Objective 1: Manage MBTA conservation requirements to minimize conflicts with military mission requirements.

High-Priority Planned Actions:

1. Formally request the USFWS issue the Station a Special Purpose Migratory Bird Permit to move and relocate birds for the purposes of transporting to a wildlife care facility, accommodate mission critical requirements, or otherwise care for the safety of migratory birds, their young, eggs, or nests by 2001.

2. Develop contractual and work order language for construction, reconstruction, and maintenance projects on the Station to minimize loss of bird nests and costly delays due to MBTA prohibitions. Ensure that appropriate offices/departments are provided this information by 2001.

3. Develop protocols for responding to injured or nuisance birds including active bird nests (with or without eggs or chicks) by 2002.

4. Develop guidelines to install exclusion devices in areas where bird access or nesting cause problems by 2003.

Other Planned Actions:

1. Consider the protection and conservation needs of neotropical migratory birds by protecting vital habitat in accordance with guidelines set forth in the DoD, PIF program by maintaining MAPS stations as funding permits and determine the natural history of neotropical migrants on the Station to better manage habitat.

2. Evaluate the possibilities of utilizing radar ornithology to determine bird migration patterns.

7.5.4 Wildlife Damage Management (Including Bird and Animal Air Strike Hazard)

Policy and Background

MCAS Miramar's boundaries interface with both urban and natural environments. Conflicts can arise with nuisance animals (coyotes, ground squirrels, skunks, and rats), which occasionally pose a health hazard. Further, Special Status Species and other native wildlife can become prey for domestic animals. MCAS Miramar pest control is through public works, and if necessary, other local vector/animal control agencies. Wildlife problems previously identified at MCAS Miramar include coyotes around the stables, sea gulls and ravens from the landfill, and interference from flocking birds and deer on the runway. Assistance with nuisance animal problems can be acquired from U.S. Department of Agriculture, Wildlife Services on a reimbursable basis. In general, special permits are usually required to remove nuisance animals and can delay the response to the problem.

Bird collisions with aircraft are a serious threat to flight safety. At MCAS Miramar, the problem has been largely with flocking species such as gulls. Distribution and abundance of bird species that pose a potential hazard can change seasonally and also vary by altitude, temperature, rainfall patterns, and surrounding land use.

Objective(s) and Planned Actions

The following are wildlife management (including BAASH) objectives and planned actions. High-priority planned actions also are listed in Table 7.

Objective I: Develop protocols for handling injured, dead, nuisance, or otherwise encountered animals at MCAS Miramar.

High-Priority Planned Actions:

1. Prepare a list of wildlife rehabilitation centers for placement of injured or abandoned wildlife by 2001.

2. Develop a standard operating procedure for injured and dead wildlife response by 2002.

Other Planned Actions:

1. Develop procedures for handling road killed/injured deer and other larger animals by 2002.

2. Publicize the problems with feeding wild animals and actively discourage this activity.

3. Map locations of wildlife/vehicle impacts on the Station.

Objective II: Reduce the potential for bird and other animal collisions with aircraft.

High-Priority Planned Actions:

1. Continue working with the Station Safety Department on revision and implementation of the BAASH program as technical expertise is required.

2. Review the implementation of the BAASH flight line mowing program for compliance with the Letter of Concurrence obtained from the USFWS in 1994 by 2003.

Other Planned Actions:

1. Improve data collection on seasonality and observations of potential BAASH problems, including coordination with landfill bird management programs, Air Traffic Control, pilots, and ground crews. Attempt to identify a better method of obtaining data from personnel.

2. Evaluate the advantages and disadvantages of owls inhabiting hangers.

3. Monitor the City of San Diego landfill operations to ensure that their bird abatement program is fully implemented as required by the lease.

7.5.5 Integrated Pest Management

Policy and Background

Pest control includes insect and disease management, particularly pesticide application management. Pesticide use in support of Station natural resources management activities will comply with applicable requirements, particularly those of the Federal Insecticide, Fungicide, and Rodenticide Act. Pesticide use is to be keep at a minimum (MCO P5090.2A). Integrated pest management also encompasses exotic plant/weed control (refer to Vegetation Management).

Revisions to this INRMP will address Africanized honey bee response and control, rodent control, health hazards related to rodent populations, and pesticide application.

Objective(s) and Planned Actions

The following are integrated pest management objectives and planned actions. High-priority planned actions also are listed in Table 7.

Objective I: Comply with the Federal Insecticide, Fungicide, and Rodenticide Act and keep pesticide use to a minimum.

High-Priority Planned Actions:

1. Support Public Works development and maintenance of the Station Pesticide Management Plan on an annual basis by provide natural resource review of plans.

Objective II: Cooperate with the Station Fire Department on the development and implementation of an Africanized honey bee action plan.

High-Priority Planned Actions:

1. Ensure that one member of the NRD staff remains up-to-date regarding the current movements and control techniques for managing Africanized honey bees.

2. Maintain informational materials to provide education regarding Africanized honey bees.

3. Assist the Fire Department and Safety Division with the development of an Africanized honey bee response plan by 2002.

Other Planned Actions:

1. Ensure that all hives operated by the apiary lease on the Station remain free of Africanized honey bees.

7.6 NATURAL RESOURCES-RELATED OUTDOOR RECREATION MANAGEMENT

7.6.1 Policy and Background

The Marine Corps requires its installations to "...provide the public with access to natural resources to the extent appropriate and consistent with military mission requirements." Further, it is Marine Corps policy that "...a program for outdoor recreational developments will be created in consultation with the Department of the Interior and appropriate state agency. Installation commanding general/commanding officers (CG/COs) are encouraged to execute a cooperative agreement with these agencies for the purpose of obtaining technical and consulting assistance. Installation CG/COs are authorized to execute cooperative agreements with other state and local agencies or institutions for the exchange of information or conducting research or study projects that will contribute to the installation's integrated natural resources management program." (MCO 5090.2A). Consultation with state and other federal agencies regarding outdoor recreation plans is an informal process. Also, authorization provided to execute cooperative agreements is not a mandate to do so.

A further goal of Marine Corps natural resources management is to manage natural resources to provide outdoor recreational opportunities, as appropriate. However, recreational opportunities at MCAS Miramar

are limited by military operational and security needs, safety concerns, limited management staff to administer programs, and the relatively small land area with a finite resource base. Recreational activities which are dependent on developed facilities, such as equestrian facilities, are managed and operated by the Assistant Chief of Staff for Marine Corps Community Services under their specific guidelines. A Remote Controlled Airplane Flyers Club and the Miramar Trap and Skeet Club operate under a special license from the Station providing access as dictated in their charters. Recreational activities that are natural resources dependent fall under the management purview of the Environment Management Department, Natural Resources Division.

Management issues at MCAS Miramar include the appropriate level of public access to allow for natural resource-dependent outdoor recreation on MCAS Miramar, and how to practically implement a program for such access; how outdoor recreation can be successfully integrated with the operations and military mission of MCAS Miramar without compromising either; and improving MCAS Miramar's public image in the San Diego area. A related management issue is staffing limitations at MCAS Miramar that preclude the development of extensive natural resource dependent outdoor recreation. Proper management and supervision of outdoor recreation programs is necessary to ensure that military safety and security requirements are met and natural resource damage is prevented. Without an increase in staffing, future development of natural resource-based outdoor recreation will necessarily be limited. Further, recreational program access to undeveloped areas at MCAS Miramar is limited to a few activities that have been approved by the Committed for Land and Airspace Management Policy and/or the Commanding General. Marine Corps policy is to permit off-road vehicle use only in areas and on trails designated by installation commanders. Existing unimproved roads must be monitored to prevent movement into sensitive areas (MCO P5090.2A). MCAS Miramar does not have the staffing to implement such a program for recreational off-road vehicle use that could include monitoring to ensure natural resources are not damaged.

Fish Pond Natural Resources Division

As surrounding areas have become urbanized, there has been increasing interest from the public to access MCAS Miramar for natural resource-related field tours and other outdoor recreation. Requests for field tours are typically limited to granting about one per month due to staffing constraints. Requests for field trips need to be submitted to the Public Affairs Office at least 60 days in advance along with proof of liability insurance. Compatibility of other outdoor recreational activities with 1) military operational and security needs; 2) safety hazards such as explosive safety distances, firing range surface danger zones, and aircraft operation compatible use/clear zones; 3) staffing limitations; and 4) resources conservation must be carefully evaluated and will continue to limit recreational access. Management practices must be compatible with MCAS Miramar's operational requirements and funding constraints. As opportunities for natural resource dependent outdoor recreation are evaluated for feasibility and compatibility as outlined in the planned actions of this section of the INRMP, public access will be considered. Implementation of any new outdoor recreational program will involve initial trial phases and will be limited to MCAS Miramar, Marine Corps Recruiting Depot, and local Marine Corps Recruiting personnel (active duty and DoD employees), their dependents, and guests. Initial trial phases are expected to last for two to three years. Following initial trial phases and a determination of surplus resource availability is made; access by the general public will be accommodated through lottery drawing.

In 1963, the Station completed a Cooperative Plan for Conservation and Development of Fish and Wildlife on NAS Miramar with signatures from representatives of the U.S. Dept. of Interior, Bureau of Sport Fisheries and Wildlife and California Dept. of Fish and Game. This cooperative plan clearly indicates that hunting and fishing were considered and anticipated to occur on the Station. A final update of the plan was never completed. With the passage of the Sikes Act Improvement Act of 1997, this INRMP now replaces the former requirement for a Cooperative Agreement or Plan. Original authorizations for issuance of permits and collection of fees for access to natural resource-dependent outdoor recreation were retained. A nominal fee for participation in each program established on MCAS Miramar will be charged under this authorization. Fees or proceeds from these programs must be used for management and enhancement of fish and wildlife programs on the installations where they are collected (MCO P5090.2A). Any fishing and hunting programs on MCAS Miramar would be in accordance with California Department of Fish and Game Regulations.

A main focus of the original plan that has been continuously maintained is the operation of a 4-acre pond in West Miramar (the "Fish Pond") as a recreational fishery. Due to its limited size, access has been limited to Station personnel and their guests. The pond was stocked repeatedly with rainbow trout and warm water fishes over the years. This pond, however, has been closed to fishing since about 1990. In a 1992 report, the USFWS (1992b) concluded that, with management, the Fish Pond could support a viable recreational sport fishery for Station personnel. In 1998, the Station Installation Restoration Program concluded that no clean up action was required and recreational fishing would not be a human health risk. During the 1990's, conditions at the Fish Pond deteriorated due to lack of management, allowing strong eutrophication and dissolved oxygen problems. Executive Order 12962 (7 June 1995) directs federal departments, including DoD, to improve the quantity, function, and sustainable productivity of recreational fisheries for increased opportunities, when practical to do so. Feasibility evaluations for rehabilitation of the Fish Pond and other ponds of East Miramar for recreational fishing are planned actions of this INRMP. Establishment of recreational fisheries at the ponds will require fish stocking.

No formal hunting program has operated on the Station, although some persons remember back to days when hunting was allowed. Beginning in the mid-1980's, natural resource staff initiated work toward development of a formal recreational hunting program involving archery deer and upland game hunting. This work showed that sufficient populations of deer, coyotes, and upland game (rabbits, quail, and doves) were present on the Station to support a hunting program (Hannon 1987). Hunting of bobcats was not evaluated. Changing priorities related to Base Realignment and Closure (BRAC) ceased any further work on this effort due to the transfer of the Station from the Navy to Marine Corps. Evaluation of the feasibility and compatibility of a recreational hunting program involving deer, coyote, and other upland game, primarily in East Miramar, will be accomplished as part of this INRMP. Hunting would be limited to shotguns and archery equipment. Initial trial phases of implementation will be limited to MCAS Miramar, Marine Corps Recruiting Depot, and local Marine Corps Recruiting personnel (active duty and DoD employees), their dependents, and guests.

Legislation and regulations relevant to Natural Resources Related Outdoor Recreation Management are summarized in Appendix A and include the following:

- Sikes Act 1960
- Sikes Act Improvement Act of 1997
- National Trails Systems Act of 1968 (Title 16 USC 1271)
- Off-Road Vehicles on Public Lands (Executive Order 11989)
- Outdoor Recreation - Federal/State Program Act (Title 16 USC 460(L) *et seq.*)
- Youth Conservation Corps Act of 1972, as amended (PL 93-408)
- Comprehensive Employment and Training Act Amendments 1978

7.6.2 Objective(s) and Planned Actions

The following are natural resources-related outdoor recreation management objectives and planned actions. High-priority planned actions also are listed in Table 7.

Objective 1: Provide outdoor recreation opportunities for MCAS Miramar personnel and the general public within the constraints of the military mission and capability of the resources.

High-Priority Planned Actions:

1. Develop an MCAS Miramar natural and cultural resource presentation to provide information and awareness to new Station personnel, interested community groups, and others by 2001.

2. Develop a Standard Operating Procedure for tour/field trip access requests by 2001.

3. Evaluate the feasibility of establishing recreational fishing and hunting programs on MCAS Miramar as discussed in this section (7.6) by 2002. Begin implementing components of programs as feasibility determinations are made.

4. Assess the opportunities for individual and group outdoor recreation on MCAS Miramar then evaluate the benefits of revising and finalizing the 1992 draft NAS Miramar Outdoor Recreation Tripartite agreement by 2005.

Other Planned Actions:

1. Install or replace interpretive signs describing significant natural resources at the Kearny Villa site, Eastgate Mall, and fish pond.

2. Determine the feasibility of restoring the Fish Pond recreational fishery and, if feasible, develop a restoration plan. Evaluate the feasibility of establishing recreational fisheries in other smaller ponds of East Miramar. Implement Fish Pond and other pond restoration, using the USFWS 1992 report as a guide, as funding and manpower permit.

3. Evaluate the desirability of developing fishing, hiking, and picnic facilities at the Fish Pond as soon as the recreational fishery has been restored. This may be a candidate for another DoD Watchable Wildlife Site.

4. Work with horse stable management personnel to minimize potential impacts on natural resources along horse riding trails.

5. Work with the Station's Visual Information Support Center to develop an environmental awareness and information video for the Station.

6. Identify opportunities to provide for public access to natural resources to demonstrate MCAS Miramar's success at conserving natural resources.

7.7 GEOGRAPHIC INFORMATION SYSTEMS AND GLOBAL POSITIONING SYSTEMS

7.7.1 Policy and Background

MCAS Miramar's NRD has a GIS created with Arc/INFO software. The majority of the information contained in the GIS is the Station's natural resources locations. This information is used by biologists, planners, and contractors to aid them in their decision-making process. It has been the NRD GIS policy to create, update, maintain, manage and analyze all GIS data layers to ensure that this information is available to biologists, planners, and contractors, quickly and readily in digital or hard copy format.

MCAS Miramar also uses a GPS unit to map natural resources locations as well as various other information, such as the extent of wildland fires. The GPS unit has enabled the NRD to quickly and efficiently map these resources, ensuring that the information available for use by decision-makers is current and up-to-date. It is the goal of the NRD to continue providing current, up-to-date information on natural resources locations.

GPS Unit

7.7.2 Objective(s) and Planned Actions

The following are GIS and GPS objectives and planned actions. High-priority planned actions also are listed in Table 7.

Objective I: Maintain the MCAS Miramar's GIS natural and cultural resources coverages, and databases, ensuring all information is current and up to date. Develop new natural and cultural resources databases as new data and information become available. Ensure that all GIS information is available to biologists, planners, contractors, and others in a quick and timely manner.

High-Priority Planned Actions:

1. Ensure that all GIS computer hardware, software, peripherals, and maintenance agreements are current. Also ensure that hardware and software are capable of complex computations and manipulations with large data sets, detailed graphics are viewable, and that quality maps and reports can be produced.

2. Annually review GIS data to advise resource managers of needs to update data sets during budget planning and programming.

3. Develop a standard for developing GIS database dictionaries and associated metadata for all MCAS Miramar GIS coverages by 2000.

4. Develop specific language that will be included in all contracts to ensure that all spatial data produced are fully compatible with MCAS Miramar's GIS database by 2001.

5. Develop a standardized system for recording and mapping significant resource observations (plants, wildlife, erosion, damage, etc.) when incidentally encountered, by 2000.

6. Create GIS data layers for natural and cultural resources from various reports and NEPA documents written for the Station. Clear backlog by 2004.

7. Ensure that the GIS specialist responsible for operating and maintaining the system annually obtains focused training regarding current technologies and uses of GIS technology as related to natural and cultural resource management on a military installation.

Other Planned Actions:

1. Convert all GIS coverages from North American Datum 1927 to North American Datum 1983.

2. Obtain current radiometrically and geometrically correct current 1inch to 400 feet digital images to be used with MCAS Miramar GIS database and GPS.

3. Develop all necessary database information for all existing GIS coverages.

4. Integrate the use of Facilities Planning AutoCAD files with Natural Resources GIS coverages.

5. Acquire any commercially available GIS products that would enhance MCAS Miramar's GIS database.

6. Provide viewing and printing access to commonly used GIS maps and other GIS data via a network by 2001.

Objective II: Maintain an operational GPS unit for use with MCAS Miramar's GIS to quickly and accurately map natural resources to provide to biologists, planners and contractors in an efficient manner.

High-Priority Planned Actions:

1. Develop standards for collection of GPS data and its easy incorporation into MCAS Miramar's GIS by 2001.

2. By 2002, develop a Standard Operating Procedure for using the GPS unit in the field and for data translation, with a software interface that is user friendly for NRD personnel.

3. Ensure all GPS hardware, software, and maintenance agreements are current. Also, ensure these are technologically advanced and capable of withstanding extreme mapping conditions (e.g., weather).

TABLE 7 CHECKLIST OF HIGH-PRIORITY PLANNED ACTIONS	
Action	**Target Year for Completion**
General Vegetation Management and Soil Conservation	
Objective I: Develop and implement a program for natural land and habitat restoration and rehabilitation.	
■ Continue exotic plant site identification and control efforts annually. Beginning in 2000, include physical removal of individual exotic plants, especially pampas grass, tamarisk, and arundo.	2002
■ Establish a program for Natural Resource Damage Repair. Implement repair actions annually during year when damage was caused.	2001
■ Complete USFWS and ACOE coordination and consultation on Natural Resource Damage Repair Program for endangered species habitat and wetlands by 2000.	2003
■ Revise the Station plan for exotic plant control and removal, which prioritizes target species and sites for control.	2004
■ Complete a reevaluation and prioritization of active erosion sites identified in the 1991 Soil Erosion Inventory.	2005
■ Update the vegetation mapping of MCAS Miramar. Minor updates will be performed more frequently as necessary.	2008
■ Ensure that the natural resources staff member responsible for plant community and soil conservation obtains focused training on an annual basis.	
Objective II: Develop and implement a program for Long-Term Ecological Trend Monitoring (LTEM) of vegetation and soil conditions on the Station.	
■ Develop a consolidated program that incorporates all previously conducted vegetation/habitat monitoring transects.	2001
■ Complete the first comprehensive sampling effort.	2002
Watershed and Floodplain Management	
Objective I: Maintain watershed productivity, quality, and functioning through soil erosion control and maintenance of vegetative cover.	
Objective II: Minimize potential impacts of flooding on high value resources by collecting and providing information on floodplain and wetland location during planning process.	
■ Delineate and map for GIS the 100-year floodplain on MCAS Miramar.	2002
Wildland Fire Management	
Objective I: Support a Wildland Fire Management Program to protect high value human and natural resource areas from catastrophic wildfire while conserving resources and military operational flexibility.	
■ Develop a set of programmatic instructions/guidelines in coordination with the MCAS Miramar Fire Department of use during wildfire suppression activities and institute a natural resource advisor program using existing staff to assist Incident Commanders with natural resource conservation issues.	2001

TABLE 7 CHECKLIST OF HIGH-PRIORITY PLANNED ACTIONS	
Action	**Target Year for Completion**
■ Prepare jointly with the MCAS Miramar Fire Department, Standard Operating Procedures for annual maintenance of the Station's fuelbreaks, firebreaks, and access roads.	2001
■ Develop procedures for habitat restoration from fire and fire suppression caused damage.	2005
■ Provide natural resource technical services to the MCAS Miramar Fire Department to support their planninf for the conduct of highest priority fuel modification actions, including prescribed burning and improved access	2003
Objective II: Track and monitor the effects of fuel modifications to support hazardous fuel reduction actions in strategic areas of MCAS Miramar and enhance/maintain native plant diversity and improve wildlife habitat.	
■ Maintain up-to-date GIS mapping of prescribed/controlled burns and wildfires by mapping each prior to the subsequent growing season. Ongoing.	
■ Develop a fuel loading report to support fire management planning which identifies high hazard areas.	2002
■ Develop a vegetation age class distribution map of the Station which shows levels of fuel loading using the GIS.	2003
Grounds Maintenance and Landscaping	
Objective I: Ensure that grounds maintenance and landscaping operations are consistent with natural resource goals and objectives.	
■ Ensure that personnel in charge of Station landscaping plans have been provided with a copy of the Presidential Memorandum directing the use of native and adapted plant materials and a list of invasive plants which should not be planted.	2001
■ Review and recommend changes to the Station landscaping plans for compliance with Presidential Memorandum directing the use of native and adapted plant materials and delete plants with the potential to escape from landscaped areas.	2002
■ Use exotic plant control program to control spread of exotic landscaping plants into natural areas. Integrate into exotic plant control program.	2003
■ Review and revise the flightline mowing program standard operating procedures to maintain consistency with BAASH program and vernal pool endangered species management requirements.	2005
Management of Special Status Species	
Objective I: Proactively maintain up-to-date presence/absence, distribution, and habitat data for all Special Status Species, to support project and activity planning, management, and implementation on MCAS Miramar.	
■ Initiate focused surveys for federally proposed and listed threatened and endangered species for which the absolute presence on MCAS Miramar has not definitively been determined.	2001
■ By 1999, develop a prioritized list of Special Status Species monitoring actions necessary to maintain a sufficiently up-to-date information database. No species distribution data should be older than three years.	2001

TABLE 7 CHECKLIST OF HIGH-PRIORITY PLANNED ACTIONS	
Action	**Target Year for Completion**
■ Evaluate the feasibility then, if feasible, implement a program for determining the presence/absence of endangered San Diego and Riverside fairy shrimp for each vernal pool on higher priority areas of MCAS Miramar. a. Evaluate the feasibility and utility of determining the presence/absence of endangered fairy shrimp in high priority areas. b. Develop a prioritized list of vernal pool areas for surveys. c. Initiate surveys in highest priority vernal pool areas. d. Initiate surveys in remaining high priority vernal pool areas.	2002 2003 2004 2006
■ Initiate Special Status Species monitoring to maintain an up-to-date database in support of EA actions and ESA compliance for planning and management for all listed and proposed species.	2003
Objective II: Monitor and manage regionally rare species to demonstrate conservation of MCAS Miramar populations under the management approach described in this INRMP.	
■ Use various media to create and maintain awareness of Station personnel, general public, and lease and easement holders of the sensitivity, values, and obligations regarding the conservation of Special Status Species and their habitat. Ongoing .	
■ Develop procedure for modifying MA boundaries to accommodate any necessary focused management of a species not adequately conserved by current MAs.	2003
■ Ensure that all natural resources staff responsible for Special Status Species management receive focused training regarding species under their primary areas of responsibility. Ongoing .	
Objective III: Assess and pursue the development of conservation agreements and/or programmatic Section 7 ESA consultation with USFWS to provide compliance with Sections 7 and 9 for Station actions.	
■ Assess the utility of completing a programmatic consultation to provide compliance for unintended and accidental potential effects to threatened and endangered species from ongoing military operational requirements, fire management, and natural resource management actions.	2002
■ Conduct a programmatic consultation to provide compliance for unintended and accidental potential effects to threatened and endangered species from military operational requirements, fire management, and natural resource management actions.	2004
■ If feasible, complete a programmatic consultation which addresses new projects and requirements which have the potential to affect threatened and endangered species.	2007
Objective IV: Monitor to ensure ESA Section 7 compliance for projects implemented or actions taken as set forth in existing Biological Opinions.	
■ Develop a comprehensive list of commitments and terms and conditions contained within the numerous formal and informal consultation documents issued to apply on the Station.	2002
■ Ensure the execution of commitments and terms and conditions contained within formal and informal consultation documents issued to apply on the Station for which the Marine Corps or another DoD agency have agreed to by execution of proposed actions. Completion dates will vary based on the specific issue.	

TABLE 7 CHECKLIST OF HIGH-PRIORITY PLANNED ACTIONS	
Action	**Target Year for Completion**
▪ Monitor the execution of commitments and terms and conditions contained within formal and informal consultation documents issued to apply on the Station for a non-DoD agency proposed actions. Completion dates will vary based on the specific issue.	
Vernal Pool Management	
Objective I: Take proactive action to prevent damage to vernal pools.	
▪ Use various media to create and maintain awareness of Station personnel, general public, and lease and easement holders of the sensitivity, values, and obligations regarding the conservation of vernal pools and their watersheds. Ongoing.	
▪ Ensure that the MCAS Miramar Ground Training Order, when revised, contains information and measures to minimize damage to vernal pools by units training on the Station. Convert NAS Miramar to MCAS Miramar instruction.	2001
▪ Place field markers, signs, or fencing around vernal pool groups with a higher susceptibility for damage to prevent accidental and/or unintentional damage. a. Develop a prioritized list vernal pool susceptibility to accidental damage. b. Vernal pools with the highest likelihood for accidental damage marked. c. Vernal pools with a high likelihood for accidental damage marked.	 2001 2002 2004
▪ Incorporate the key elements of the 1991 Vernal Pool Management Plan into this section of the INRMP for the next revision.	2007
▪ Ensure that the natural resource staff member with primary responsibility for managing vernal pools on the Station receives focused training. Ongoing.	
Objective II: Develop and maintain high-quality and up-to-date GIS mapping of vernal pools and their watersheds that supports proactive planning and impact avoidance.	
▪ Complete mapping of vernal pool basins for the GIS to sub-meter accuracy with a GPS according to the following schedule: a. Management units with a higher potential for damage or development. b. Management units with moderate potential for damage or development. c. Management units with low potential for damage or development.	 2002 2005 2007
▪ Update mapping of vernal pool watersheds for the GIS to a more exact and accurate coverage with a GPS according to the following schedule: a. Management units with a higher potential for damage or development. b. Management units with moderate potential for damage or development. c. Management units with moderate potential for damage or development.	 2003 2006 2008
Objective III: Implement a program for vernal pool restoration and creation to maintain no net loss of vernal pool basin resources.	
▪ Develop procedures to respond to and repair accidental damage to vernal pools and associated threatened and endangered species.	2002
▪ Pursue a programmatic CWA Section 404 Permit from the ACOE for repair of accidental damage to vernal pool wetlands and accomplish associated ESA Section 7 consultation with the USFWS to support such actions.	2003

TABLE 7 CHECKLIST OF HIGH-PRIORITY PLANNED ACTIONS	
Action	**Target Year for Completion**
■ Ensure the completion of BRAC mitigation measures for impact avoidance, minimization and compensation as committed to by the DON.	2006
General Wetlands Management	
Objective I: Identify and manage wetlands on MCAS to maintain no net loss of wetland values.	
■ Ensure that all natural resources staff responsible for wetlands conservation have obtained formal wetlands delineation training and that at least one staff member has received this training at all times.	2002
■ Ensure compliance with Section 404 Clean Water Act permits issued by the ACOE.	
■ Prepare a GIS wetlands mapping coverage for MCAS Miramar. a. Accomplish an assessment of the ability to use wetland vegetation type and vernal pool mapping to serve as the tool for managing wetlands and meet the wetlands inventory requirements. b. Based on the findings of the assessment, complete a wetlands inventory necessary to meet wetland inventory requirements.	2002 2004
General Wildlife Management	
Objective I: Maintain healthy wildlife populations as a component of the ecosystem.	
■ Establish general wildlife population trend monitoring program as component of long-term ecological trend monitoring program. As funding becomes available.	
■ Ensure that the natural resources staff member responsible for wildlife management and conservation obtains focused training regarding management of these resources as related to conservation on a military installation on an annual basis.	
Migratory Bird Management	
Objective I: Manage MBTA conservation requirements to minimize conflicts with military mission requirements.	
■ Formally request the USFWS issue the Station a Special Purpose Migratory Bird Permit..	2001
■ Develop contractual and work order language for construction, reconstruction, and maintenance projects on the Station to minimize loss of bird nests and costly delays due to MBTA prohibitions. Ensure that appropriate offices/departments are provided this information.	2001
■ Develop protocols for responding to injured or nuisance birds including active bird nests.	2002
■ Develop guidelines to install exclusion devices in areas where bird access or nesting cause problems.	2003
Wildlife Damage Management (Including Bird and Animal Air Strike Hazard)	
Objective I: Develop protocols for handling injured, dead, nuisance, or otherwise encountered animals at MCAS Miramar.	
■ Prepare a list of wildlife rehabilitation centers for placement of injured or abandoned wildlife.	2001
■ Develop a standard operating procedure for injured and dead wildlife response.	2002
Objective II: Reduce the potential for bird and other animal collisions with aircraft.	

TABLE 7 CHECKLIST OF HIGH-PRIORITY PLANNED ACTIONS	
Action	**Target Year for Completion**
▪ Continue working with the Station Safety Department on revision and implementation of the BAASH program as technical expertise is required.	
▪ Review the implementation of the BAASH flight line mowing program for compliance with the Letter of Concurrence obtained from the USFWS in 1994.	2003
Integrated Pest Management	
Objective I: Comply with the Federal Insecticide, Fungicide, and Rodenticide Act and keep pesticide use to a minimum.	
▪ Support Public Works development and maintenance of the Station Pesticide Management Plan on an annual basis by provide natural resource review of plans.	
Objective II: Cooperate with the Station Fire Department on the development and implementation of an Africanized honey bee action plan.	
▪ Ensure that one member of the NRD staff remains up-to-date regarding the current movements and control techniques for managing Africanized honey bees. Ongoing.	
▪ Maintain informational materials to provide education regarding Africanized honey bees. Ongoing.	
▪ Assist the Fire Department and Safety Division with the development of an Africanized honey bee response plan.	2002
Natural Resources-Related Outdoor Recreation Management	
Objective I: Provide outdoor recreation opportunities for MCAS Miramar personnel and the general public within the constraints of the military mission and capability of the resources.	
▪ Develop an MCAS Miramar natural and cultural resource presentation to provide information and awareness to new Station personnel, interested community groups, and others.	2001
▪ Develop a Standard Operating Procedure for tour/field trip access requests.	2001
▪ Evaluate the feasibility of establishing recreational fishing and hunting programs on MCAS Miramar as discussed in this section (7.6). Begin implementing components of programs as feasibility determinations are made.	2002
▪ Assess the opportunities for individual and group outdoor recreation on MCAS Miramar then evaluate the benefits of revising and finalizing the 1992 draft NAS Miramar Outdoor Recreation Tripartite agreement.	2002
Geographic Information Systems and Global Positioning Systems	
Objective I: Maintain the MCAS Miramar's GIS natural and cultural resources coverages, and databases, ensuring all information is current and up to date. Develop new cultural resources databases as new data and information become available. Ensure that all GIS information is available to biologists, planners, contractors, and others in a quick and timely manner.	
▪ Ensure that all GIS computer hardware, software, peripherals, and maintenance agreements are current. Also ensure that hardware and software are capable of complex computations and manipulations with large data sets, detailed graphics are viewable, and that quality maps and reports can be produced. Ongoing.	

TABLE 7 CHECKLIST OF HIGH-PRIORITY PLANNED ACTIONS	
Action	**Target Year for Completion**
■ Annually review GIS data to advise resource managers of needs to update data sets during budget planning and programming. Annually	
■ Develop a standard for developing GIS database dictionaries and associated metadata for all MCAS Miramar GIS coverage.	2002
■ Develop specific language that will be included in all contracts to ensure that all spatial data produced are fully compatible with MCAS Miramar's GIS database.	2001
■ Develop a standardized system for recording and mapping significant resource observations (plants, wildlife, erosion, damage, etc.) when incidentally encountered.	2002
■ Create GIS data layers for natural and cultural resources from various reports and NEPA documents written for the Station. Clear backlog.	2004
■ Ensure that the GIS specialist responsible for operating and maintaining the system annually obtains focused training regarding current technologies and uses of GIS technology as related to natural and cultural resource management on a military installation.	
Objective II: Maintain an operational GPS for use with MCAS Miramar's GIS to quickly and accurately map natural resources to provide to biologists, planners and contractors in an efficient manner.	
■ Develop standards for collection of GPS data and its easy incorporation into MCAS Miramar's GIS.	1999
■ Develop a Standard Operating Procedure for using the GPS in the field and for data translation and a software interface that is user friendly for NRD personnel.	1999
■ Ensure all GPS hardware, software, and maintenance agreements are current. Also ensure these are technologically advanced and capable of withstanding extreme mapping conditions (e.g., weather).	Ongoing