PACIFIC SEABIRDS

A Publication of the Pacific Seabird Group

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PACIFIC SEABIRD GROUP

Dedicated to the Study and Conservation of Pacific Seabirds and Their Environment

The Pacific Seabird Group (PSG) was formed in 1972 due to the need for better communication among Pacific seabird researchers. The Group coordinates and stimulates the field activities of members involved in research, and it informs its members and the general public of conservation issues relating to Pacific Ocean seabirds and the marine environment. Group meetings are held annually, and the PSG publication, *Pacific Seabirds* (formerly the *PSG Bulletin*), is issued twice a year. Current activities include involvement in seabird sanctuaries, seabird restoration after oil spills, seabird/fisheries interactions, and endangered species. Policy statements are issued on conservation issues of critical importance. Although PSG's primary area of interest is the West Coast of North America and adjacent areas of the Pacific Ocean, it is hoped that seabird enthusiasts in other parts of the world will join and participate in PSG. PSG is a member of the U.S. Section of the International Council for Bird Preservation, the International Union for Conservation of Nature (IUCN), and. the American Bird Conservancy. Annual dues for membership are $25 (individual and family); $15 (student, undergraduate and graduate); and $750 (Life Membership, payable in five $150 installments). Dues are payable to the Treasurer; see Membership/Order Form next to inside back cover for details and application.

Pacific Seabirds

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Donations

The Pacific Seabird Group is a nonprofit organization incorporated under the laws of the State of California. Contributions to the Pacific Seabird Group are tax deductible [IRS Section 501(c)(3)] to the fullest extent allowed by law.

Pacific Seabirds Submission Deadlines

All items intended for publication in Pacific Seabirds must be received by The Editor or Associate Editor for Conservation prior to **March 15** (Spring issue) and **September 15** (Fall issue). Manuscripts may be submitted at any time.

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Volume 28 2001 Number 2

CONSERVATION NEWS

Craig Harrison

PETITION FILED TO LIST KITTLITZ'S MURRELET AS ENDANGERED

In May, the Center for Biological Diversity and other groups filed a "scientific" petition with the U.S. Fish and Wildlife Service to list the Kittlitz's Murrelet (*Brachyramphus brevirostris*) under the Endangered Species Act. The petition cites this species' vulnerability to global warming as the major basis for the petition. The petition states that Kittlitz's Murrelets forage almost exclusively at the face of tidewater glaciers or near the outflow of glacial streams. It also notes that many Kittlitz's Murrelets nest in alpine areas in bare patches in ice and snow. According to these groups, an energy policy in the USA that is dependent on coal and other fossil fuels "virtually guarantees the extinction of this imperiled species." The petition does not indicate how listing would reverse the purported imminent extinction, nor does it advocate energy policies (e.g., expanded use of nuclear fuel) as an alternative to fossil fuels.

CASPIAN TERNS AND CORMORANTS BEAT THE FEDERAL GOVERNMENT

In August, U.S. District Court Judge Rothstein entered an order that gave victory to the Caspian Terns (*Sterna caspia*) and cormorants (*Phalacrocorax* spp.) on every claim and on every ground in the lawsuit brought by National Audubon Society, the American Bird Conservancy and other organizations that had sued on their behalf (Pacific Seabirds 27:65, 2000). The Corps is required to do a full environmental impact statement because of the uncertainty of the effects of the action, the cumulative effects on terns and the "public controversy." In addition, the judge ruled that the U.S. Fish and Wildlife Service (USFWS) should also have done an environmental impact statement on the Migratory Bird Treaty Act permit. The operative language in the ruling is, "Defendants are ordered to refrain from further action regarding Caspian Tern and cormorant habitat in the Columbia River estuary and to refrain from harassing the Caspian Terns and cormorants until defendants prepare an EIS." The government must pay fees and costs to the plaintiff bird organizations. This is a major victory against bad science. USFWS, by going along with the National Marine Fisheries Service on some of these issues, has created for itself a huge headache. It remains to be seen whether environmental impact statements (which take years) will be needed for other Migratory Bird Treaty Act collection permits. The federal government has appealed the decision to the Ninth Circuit Court of Appeals in San Francisco.

WASHINGTON STATE DESTROYS EXPERIMENTAL CASPIAN TERN COLONY ON BARGE

In spring 2001, biologists established a new Caspian Tern colony on a barge in Commencement Bay, Tacoma, to attract terns that had been displaced from a superfund site nearby when the site was cleaned up. Caspian Terns have become controversial in the Pacific Northwest because of a misguided campaign by the National Marine Fisheries Service to blame terns for the slow recovery of endangered "ecologically significant units" of salmon. These efforts persuaded local officials to object to colonies being reestablished in Grays Harbor and Willapa Bay. The barge project was strongly opposed by the Puyallup Indian Tribe because of concerns that the terns would eat too many salmon smolts. Because of this strong opposition, Washington Fish and Game ended the project and collected the eggs from about 200 active nests. The barge was removed and the birds were left with no place to nest in the middle of the breeding season. Apparently Washington State has a blanket Migratory Bird Treaty Act collection permit for research and management studies, which was invoked to destroy this experimental colony.

U.S. FISH AND WILDLIFE SERVICE DROPS REFUGE FOR CASPIAN TERNS

The U.S. Fish and Wildlife Service assured PSG in November 2000 that it would complete within a few months a preliminary study on whether East Sand Island in the Columbia River—the location of the largest Caspian tern colony in the world—meets the criteria of a national wildlife refuge. USFWS still has failed to do so. Apparently the agency has decided not

to pursue the acquisition of this island for a refuge due to political pressures. A sad day for the agency, whose trust responsibility is to stand up for seabirds and other wildlife.

AUSTRALIA ANNOUNCES CHRISTMAS ISLAND SPACEPORT

Australia's remote Christmas Island (Indian Ocean) will become the site of a satellite launch center with the first launch expected in late 2003. The island's proximity to the equator makes it an ideal satellite launch site, with heavier payloads being sent into orbit using less fuel. Christmas Island is a heavily forested 135m^2 island that lies off Australia's northwest coast. This island is the summit of an undersea mountain covered by rainforest, with a peak 1,181 feet above sea level and a coastline of towering sea cliffs. About one-third of Christmas Island has been cleared of forest and mined for large phosphate deposits, which are now almost exhausted.

Christmas Island is home for three endemic seabirds: Christmas Frigatebird (*Fregata andrewsi*), Abbott's Booby (*Sula abbotti*) and Golden Bosunbird (*Phaethon lepturus fulvus*), as well as two endemic land birds. Abbott's Booby, the world's rarest sulid, numbers about 2,500 pairs and breeds only in tall rainforest trees on the plateau. A national park (now a World Heritage Site) was created in 1980 includes most breeding areas. The planning of the space port seems to have proceeded without significant input from seabird biologists. Although plans are unclear, if they protect the pristine rainforest where Abbott's boobies nest and utilize instead the previously logged and phosphate-mined areas for development, some experts believe that the threats to seabirds can be minimized. Invasion of introduced pests is another cause for concern. Predatory ants are a major problem there and may be spread by this development.

AUDUBON ALASKA AND PSG COMMENT ON ENVIRONMENTAL IMPACT STATEMENT ON ALASKA GROUNDFISH FISHERIES

PSG and Audubon Alaska (the Alaska office of the National Audubon Society) jointly filed comments in July that addressed seabirds issues with respect to Alaska groundfish fisheries. The comments were in response to the National Marine Fisheries Service's Draft Programmatic Supplemental Environmental Impact Statement (PSEIS) on the groundfish fisheries. This task would never have been completed without Vivian Mendenhall's review of the 3,500-page document to identify seabird issues.

PSG emphasized its interest in maintaining the numbers and distributions of still-common species, especially those that are endemic to the north Pacific and Bering Sea. In particular, PSG and Audubon pointed out that none of the proposed alternatives addressed and integrated all aspects of the fishery and the affected environment, including marine mammals and seabirds. This lack of full, integrated programmatic Fishery Management Plan alternatives is the greatest shortcoming of the report.

The report did include sections on ecosystem effects and cumulative effects of the fisheries, and PSG noted that only by considering these effects can fishery managers protect either their target stocks or the other species that use the marine environment. PSG noted that important mitigation measures are being developed and tested to reduce seabird bycatch in longlines, but that no mitigation measures have been proposed to reduce seabird bycatch in trawls. PSG urged NMFS to propose such measures. Even though no endangered species is currently at risk from trawls, seabird mortality (especially among alcids and gulls) should be reduced as much as feasible.

The National Marine Fisheries Service has recently (December 2001) announced that it will issue a new draft PSEIS to expand the alternatives and improve analysis of their impacts. The new draft should be available for public comment sometime after September 2002.

UPDATE ON SEABIRD BYCATCH REGULATIONS FOR ALASKA'S LONGLINE FISHERIES

In December 2001, the North Pacific Fisheries Management Council endorsed revised regulations on seabird bycatch deterrents in the Alaska demersal longline fisheries. The proposed revisions would require most longline vessels longer than 16.9m to tow a pair of streamer lines while setting their gear, in order to keep seabirds from getting caught on the hooks; smaller vessels would use a single streamer line, another permitted deterrent, or a combination of these. The proposed revisions can be seen at http://www.fakr.noaa.gov/protectedresources/seabirds/avoidanceaction.pdf.

The revisions are based on the results of recently completed research. During 1999 and 2000, researchers studied the effectiveness of various devices to deter seabirds from getting caught in longline fishing gear. Observations were made on active fishing vessels in the sablefish (*Anomplopoma fimbria*) fishery in the Gulf of Alaska and the Aleutian Islands, and in the Pacific cod (*Gadus macrocephalus*) fishery in the Bering Sea. Funding was provided by the US Fish and Wildlife Service, the National Marine Fisheries Service, and the Washington Sea Grant Program. The report, "Solutions to seabird bycatch in Alaska's demersal longline fisheries," by Ed Melvin, Julia Parrish, Kim Dietrich and Owen Hamel, is available on line or in hard copy from the Washington Sea Grant Program web page;

http://www.wsg.washington.edu/pubs/seabirds/seabirdpaper.html.

The authors recommended that Alaska demersal longline vessels be required to fly paired streamer lines (also called scaring lines or tori lines) while setting gear, using very specific standards for performance and materials. Streamer lines are lines hung from a high point on the vessel and extend 90m astern of the vessel. The line closest to the stern is aloft for 40 to 60m and includes streamers made of orange plastic tubing. This distance that streamers are aloft is the "performance standard," which is critical to making streamer lines effective. Functionally, paired streamer lines create a moving fence that bounds the sinking groundline (the main fishing line), thus precluding birds from attacking the baited hooks. Compared to controls (no deterrent gear in use), paired streamer lines reduced seabird bycatch rates by 94% in the cod fishery and 100% in the sablefish fishery in the final year of field tests.

Streamer lines are the most commonly used seabird bycatch deterrent in the world's longline fisheries. The proposed regulations for the Alaska fishery are unique, in that they call for streamer lines flown in pairs and according to specific performance standards. The final regulatory package approved by the Council includes less-stringent requirements for inside waters, small boats (less than 16.9m), and vessels that use "snap-on" gear.

The researchers also made several non-regulatory recommendations. These included informing the fleet of their bycatch rates (report cards), encouraging the establishment of an industry-based peer system, providing education programs for fishers, taking action at national and international levels, and future research.

New regulations are still several months away. The U.S. Fish and Wildlife Service is preparing to issue a new biological opinion on the Short-tailed Albatross (*Phoebastria albatrus*) under the Endangered Species Act, taking into account the expected reduction in the birds' risk of being caught in longline gear. Then the National Marine Fisheries Service will rewrite the full regulations on deterrents and publish them in the Federal Register. The new regulations are expected to be in force by the middle of 2002, according to the National Marine Fisheries Service. Until then, regulations require that one of several deterrents must be used; streamer lines are currently permitted but not required.

The fishing industry has been a constructive partner in the development of protection for seabirds from the dangers of longline gear. However, more progress will be needed to get ready for the new regulations. Streamer lines of the recommended type have been offered free to Alaskan longliners by the USFWS since March 2000. As of September 2001, 561 of approximately 2040 Alaskan longline vessels had requested the streamer lines; over 700 more vessels can be supplied from stock now on hand, according to Greg Balogh of USFWS.

--Ed Melvin and Vivian Mendenhall

NATIONAL MARINE FISHERIES SERVICE APPOINTS NATIONAL SEABIRD COORDINATOR

In October, NMFS announced the appointment of PSG member Kim Rivera as the agency's first National Seabird Coordinator. Rivera's first order of business includes coordinating the regional implementation of the National Plan of Action to protect seabirds during fishing operations. The plan outlines specific steps for reducing the incidental catch of seabirds in longline fisheries where a problem exists. Congratulations to Kim.

UPDATE ON EXTENDING THE REACH OF THE MIGRATORY BIRD TREATY ACT TO 200 MILES OFFSHORE

As reported previously (Pacific Seabirds 28:13, 2001), the U.S. Department of Interior issued a legal opinion in late 2000 that the Migratory Bird Treaty Act applies throughout the Exclusive Economic Zone, which extends 200 miles off U.S. shores. Until now, the government's jurisdiction to protect birds under the Migratory Bird Treaty Act has been considered to extend only 12 miles offshore, although marine mammals and other fauna are protected out to 200 miles under other laws. PSG and other conservation groups have urged that jurisdiction over marine birds be made consistent with that for other resources, to facilitate conservation of seabirds with respect to fishing, oil pollution, and other threats. The Alaska Region of USFWS requested the extension to 200 miles during the 1980s and again in February 1996.

The new opinion was developed in coordination with the U.S. Department of Justice, after considering the comments of the National Marine Fisheries Service. The opinion was subject to a review period by the National Marine Fisheries Service (NMFS) until July 19, 2001, during which time USFWS could not enforce it without the consent of NMFS. NMFS has not taken the high road and agreed to implement this opinion, and instead has been able to extend the deadline for appeal to the Office of Legal Counsel in the Department of Justice until January 2002. The Department of Interior Solicitor's opinion was accompanied in January 2001 by a letter from the Deputy Associate Solicitor, Parks and Wildlife, which advised USFWS that they can and should initiate discussions with the NMFS as to how the Migratory Bird Treaty Act program can be enforced.

--Craig Harrison and Vivian Mendenhall

PSG URGES CANADA TO PREPARE A GOOD NATIONAL PLAN TO REDUCE INCIDENTAL TAKE OF SEABIRDS

PSG has written Canada's Minister of Fisheries and Oceans concerning the development and implementation of the FAO International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries, and the development of a national plan in Canada. While Canada was a leading nation in the development of the FAO Code of Conduct on Responsible Fisheries, Canada has not yet completed its assessment of seabird bycatch in Canadian longline fisheries, even though there are indications that it could be an issue in some locations, at some times of the year, and for certain species. PSG noted that beyond some initial training of fisheries observers, there are very limited programs in place to collect adequate data to fill in the large gaps that exist at present.

PSG noted with encouragement that Fisheries and Oceans officials seem interested in conducting an assessment of seabird bycatch in other fishing gear at the same time. We strongly supported this assessment which would be beneficial to reducing bycatch of non-target species. PSG concluded by noting that there are many preventive and mitigating actions or modifications to fishing procedures that could reduce bycatch.

PSG COMMENTS ON WHITE SEABASS FISHERY PLAN IN CALIFORNIA

PSG commented on the California Department of Fish and Game's White Seabass Fishery Management Plan in November 2001, urging that the plan include a provision for onboard observers to monitor bycatch. According to the plan itself, a small study of bycatch in the commercial set and drift gill net fisheries for white seabass (*Atractoscion nobilis*) during the 1980s showed that cormorants (*Phalacrocorax* spp.), marine mammals, and over 140 other nontarget species were caught. Because the fishery has moved farther offshore since that study, and because it also has a small longline component, a number of additional seabird species may be vulnerable. Yet the plan includes no proposal for monitoring bycatch. PSG commended Fish and Game for the development of fishery management plans in general.

PSG RAISES CONCERNS ABOUT OFFSHORE OIL AND GAS DEVELOPMENT IN BRITISH COLUMBIA

In August 2001, PSG wrote British Columbia's Minister of Energy and Mines to express concern regarding the potential lifting of British Columbia's offshore oil and gas moratorium. PSG noted that the North Coast waters of British Columbia, particularly Hecate Strait, support large populations of marine birds. For example, these waters are home to the majority of the world's population of Ancient Murrelets. In addition, hundreds of thousands of Sooty Shearwaters migrate there each summer and fall from the Southern Hemisphere. PSG wrote to ensure that the decision makers and public of British Columbia are aware of the importance of the north coast to these and many other seabird species. We would like to ensure that existing data on seabird populations of the affected region, available primarily from the Canadian Wildlife Service, be thoroughly examined during the consultation process to consider lifting the moratorium, and that the impacts of oil and gas exploration on marine bird populations be addressed as a major issue.

The 1989 provincial moratorium was established in response to public concern over the environmental impacts of the *Nestucca* and *Exxon Valdez* oil spills. PSG agreed that a comprehensive, transparent, peer-reviewed environmental risk assessments for potential development on the North Coast be made available to all. The minister responded in October that he remained committed to a public and scientific process whereby all risks would be evaluated before a decision was made.

PSG SUPPORTS RAT ERADICATION ON ANACAPA ISLAND

The National Park Service was about to begin a rat eradication program on Anacapa Island in the Channel Islands National Park, California, in November 2001. The anticoagulant rodenticide brodifacoum would have been dropped from aircraft. However, the agency postponed the rat eradication on the eve of its commencement due to fears of a lawsuit brought by the Fund for Animals. PSG wrote the Superintendent of the Channel Islands National Park, in Southern California, concerning its disappointment that the Park Service has delayed the action. PSG noted that there seems to be a lack of appreciation for the large losses to migratory birds that will continue until rats are eradicated. PSG made the following points:

(1) Xantus's Murrelets (*Synthliboramphus hypoleucus*) are rare, occurring on 4-5 islands in the U.S. and 4-6 islands in Mexico. Evidence suggests the population on Santa Barbara Island, largest in the U.S., has declined significantly. Introduced predators are a major cause of declines on these islands.

(2) PSG is considering petitioning to list the species under state and federal endangered species acts.

(3) The Anacapa Island group apparently hosts a small population of Xantus's Murrelets, but population trends there are unknown. There appears to be a considerable amount of

unused nesting habitat, but it is unknown how many murrelets the island group could support.

(4) Introduced black rats (*Rattus rattus*) and native deer mice (*Peromyscus* spp.) apparently eat murrelet eggs on Anacapa, thereby limiting productivity. On Santa Barbara Island, mice take approximately 30-50% of the eggs produced each year; which has been a significant factor in the Santa Barbara Island population decline. PSG believes that black rats take more eggs, and possibly chicks, on the Anacapa Islands. It is likely that this rate of predation has consequences at the population level there.

(5) The use of aerially delivered rodenticides to eradicate introduced mammalian predators on seabird islands has been tested and is a well-established technique worldwide. PSG believes that eradication of black rats from the Anacapa Islands will promote the population growth of Xantus's Murrelets and other seabird species.

(6) Delaying the project will likely result in a less efficient eradication program. Additional collateral damage to other seabird species (e.g., gulls) may occur as these species are more numerous on the island later in the winter.

(7) PSG is not concerned about the anticipated minimal level of collateral damage to Western Gulls (*Larus occidentalis*) posed by application of the rodenticide during November, since Western Gulls are increasing worldwide.

PSG NEWS

PSG MOURNS THE DEATH OF STEVE SPEICH

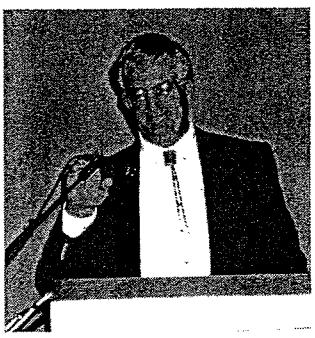
Steven M. Speich, long-time PSG member and editor, died on 8 December 2001 after an 18-month battle against cancer. His death is a great loss to PSG and his colleagues.

Steve was a seabird biologist and ecological consultant in Washington and Arizona for over 30 years. He contributed a great deal to PSG. He was the coordinator of research guidelines for PSG's Marbled Murrelet Technical Committee from 1987 through 1993. As editor of *Pacific Seabirds* from 1996 through 2000, he raised the journal to a higher standard with a new format and peer review of articles. He also served as Publications Chair from 1996 until his death; among other projects, he worked to make PSG a joint publisher of *Marine Ornithology*, and he brought PSG into the electronic age by developing our first web site. He received PSG's Special Achievement Award at the 27th Annual Meeting in February 2000 (Pacific Seabirds 27:21, 2000).

Steve will be missed for his quiet but determined role during discussions of PSG affairs. He was extremely conscientious—his issues of *Pacific Seabirds* almost always came out on time, in spite of his many other obligations. It was typical of Steve that he was still hoping to complete work for PSG at the time of his death.

We will miss Steve Speich greatly, and we extend our deep sympathy to his wife Chris and his son Steven.A gathering to remember Steve is being planned for the PSG Annual Meeting in February; please see the following article for details.

Below: Steve at the PSG meeting in February 2000—celebrating, receiving PSG's Special Achievement Award from Mark Rauzon, and accepting it. Photos by Kim Nelson.



29TH ANNUAL MEETING TO BE HELD IN SANTA BARBARA IN FEBRUARY

PSG is pleased to invite you to attend their 29th Annual Meeting, to be held on 20-23 February 2002 at the Santa Barbara Museum of Natural History in Santa Barbara, California. The meeting will feature two plenary speakers and two special symposia; there will also be oral and poster sessions for contributed papers. Other events will include a Lifetime Achievement award to two eminent ecologists, field trips, and committee meetings.

Plenary Speakers are expected to initiate each day of papers (21-23 February); they will include David Ainley and Hugh Drummond. Symposia will be held on the biology and conservation of American White Pelicans and on oil and California's seabirds. As usual, there will be several social gatherings associated with the meeting, culminating in a banquet and dance at the Santa Barbara Maritime Museum on Saturday 23 February. At the banquet, Lifetime Achievement Awards will be given to Philip and Myrtle Ashmole.

A special informal gathering will be held to remember Steve Speich. People who knew him are welcome to meet at 6:30 PM onThursday, 21 February, at the MacVeigh House, which is part of the Santa Barbara Museum of Natural History.

On Wednesday 20 February, there will be meetings of PSG's standing committees (Seabird Monitoring, Marbled Murrelet, and Xantus's Murrelet) and the PSG Executive Council; there will also be a workshop on White Pelicans.

This year, there are two major efforts to help students attend the meeting. PSG has reduced the registration fee by 50% for students (students $85; non-students $170). Student travel awards in the amount of $200 have been made available by meeting cosponsors, the U.S. Geological Survey (for students from the U.S. and Canada) and the Channel Islands National Marine Sanctuary (for students from other countries). Inexpensive housing has also been arranged. We are looking for an excellent student turnout from all countries with interest.

Santa Barbara is a beautiful city located on a broad sandy beach and backed by the impressive Santa Ynez mountains; there is much to explore during the day and night. Many field trips also are available, including free boat trips to the Channel Islands offered by the Channel Islands National Park on Tuesday (19 February), Wednesday (20 February), and Sunday (24 February). Other field trips are: California Condors (24 February), Western Foundation of Vertebrate Zoology (24 February) and the Salton Sea (24-26 February).

For general information, contact Harry Carter, U.S. Geological Survey, 6924 Tremont Road, Dixon, CA 95620 (707-678-0682 x625; Harry_Carter@usgs.gov) or Sarah Fangman, Channel Islands National Marine Sanctuary, 113 Harbor Way, Santa Barbara, CA 93109 (805-884-1473; sarah.fangman@cinms.nos.noaa.gov). [Editor's note: as of press time, Carter could not be reached by Email, as with everyone else in the Department of Interior.]

For information about the scientific program, contact Lisa Ballance, NOAA, NMFS, SW Fisheries Science Center, 8604 La Jolla Shores Drive, La Jolla, CA 92037 (858-546-7173; lisa.ballance@noaa.gov).

For more information on meeting details, travel, all field trips, accommodations, awards, registration, abstract submission, and updates, check the PSG web page at: www.pacificseabirdgroup.org.

NEW PSG WEB SITE NAME

PSG's Web site now has its own URL: http://www.pacificseabirdgroup.org. It contains information on PSG events, has links to a variety of other seabird sites, and is being developed to include PSG publications.

REGIONAL REPORTS

Regional reports summarize seabird work of interest to PSG members. Reports are organized primarily by location of the work, not by affiliation of the biologist.

ALASKA

Summarized by **Rob Suryan**

BEAUFORT AND CHUKCHI SEAS

Alaska Maritime National Wildlife Refuge (AMNWR) staff continued their annual monitoring of seabirds nesting at Bluff and Cape Lisburne in July and August. **Art Sowls, Ed Murphy, and Shawn Murphy, Dave Roseneau**, and **Jim Schneeweis** conducted this work.

At Northstar Island in the Beaufort Sea near Prudhoe Bay, **Bob Day** with Alaska Biological Research, Inc. (ABR) used radar and visual surveys to study movements and behavior of migrating birds (especially eiders) with funding from British Petroleum. Other biologists with ABR continued several long-term monitoring studies of eiders in Northern Alaska. **Betty Anderson** and **Rick Johnson** continued their studies of Spectacled Eiders at (respectively) the Kuparuk Oilfield for the 9th year and on the Colville River Delta for the10th year. In addition to aerial surveys for breeding-pairs for all eider species, they continued nesting productivity and habitat use studies, and used time-lapse video cameras to record nest predators and determine incubation constancy. **Rick Johnson** and **Bob Burgess** also conducted aerial and ground surveys for Steller's and Spectacled Eiders at selected locations in the National Petroleum Reserve. **Steve Murphy** directed similar aerial and ground surveys for eiders at several sites slated for oil exploration activities. **Bob Ritchie** and **Jim King** conducted aerial surveys for Steller's Eiders in the Barrow area for the US Fish and Wildlife Service (USFWS) and the North Slope Borough.

BERING SEA

AMNWR staff continued studies at several sites in the Bering Sea. Studies at St. Paul Island were conducted from June to September by **Art Sowls, Susan Woodward, Robin Valler, Julie Snorek, Elizabeth Ballontoni, Alan Springer** (University of Alaska, Fairbanks [UAF]), **Matthew Springer, and Tonia Bittner**. Art Sowls, **Kent Sundseth, Ram Papish, Michelle Wada**, and **Anja Schiller** conducted studies at St. George Island from May to September. As part of a cooperative program with Minerals Management Service to document base levels of heavy metals and other contaminants in long-lived seabirds, crews also collected murre eggs at St. George Island. A brief survey of seabird and marine mammal populations at Walrus Island was conducted by Art Sowls, **Paula White, Bruce Robson**, (National Marine Fisheries Service [NMFS]), **Terry Spraker** (NMFS), and **Phil Zapadil** (Tribal Government of St. Paul).

Scott Hatch and **Verena Gill** initiated studies to identify fulmar the populations that contribute to seabird bycatch in Alaska's long-line fisheries. This research will include the development of genetic markers to identify source populations and satellite telemetry to track the seasonal movements of individuals. In June they deployed satellite transmitters on two breeding adult fulmars captured on St. George Island in the Pribilofs. Harnesses made of Teflon ribbon worked well, since both birds seemed to be doing fine 3 months after release. Hatch and Gill expect to track the birds' movements for up to a year.

Working in cooperation with the Gambell and Savoonga Native Corporations, **David Irons** and **Kent Wohl** (USFWS) and **Dan Roby** (Oregon State University [OSU]) continued the seabird monitoring work that they started in 2000 on St. Lawrence Island. Field work was conducted by **Adrian Gall** (a MSc student at OSU) and **Lisa DeMatteo. Victor Zubakin**, a visiting ornithologist from the Russian Academy of Sciences in Moscow, worked with Adrian for the second season. **Brandon Waghiyi** and **Arthur Gologergen** from Savoonga joined the crew in the beginning of July. The crews monitored population size and breeding success of Black-legged Kittiwakes, Common Murres, and Thick-billed Murres at plots established on cliffs near Kiveepuk Point, 10 km west of Savoonga. Murres appeared to have a good season compared to last year. Kittiwakes, however, had a complete failure, with very few nest structures built. The few kittiwake eggs laid were not actively incubated, and the only chick that hatched survived just 15 days. This is in contrast to last year's successful breeding season for kittiwakes. Field crews also monitored colony attendance, breeding success, diet composition, and body composition of Least Auklets and Crested Auklets at the Kitnik colony 4 km east of Savoonga. They also color-banded and resighted breeding adults of both

species. Breeding success appeared to be 15% lower than 2000 at the Kitnik colony. Breeding success at the Myaughee colony 8 km further east appeared similar to last year. In addition to the field work, the crews enjoyed living in Savoonga and had the opportunity to share their work with the 7th grade and 10th grade life science classes at the Hogarth Kingeekut Memorial School. The second season of the St. Lawrence Seabird Monitoring Program was a success, thanks to the support and hard work of all crewmembers and the village of Savoonga. They look forward to continuing the project in the summer of 2002.

Rob MacDonald and staff at the Togiak National Wildlife Refuge monitored population numbers and productivity of Black-legged Kittiwakes, Common Murres, and Pelagic Cormorants at Cape Peirce. The camp was opened on 30 April with seabird monitoring occurring from 8 May to 26 September. In addition, predation and disturbance of seabirds were recorded, and beached bird surveys were performed. Staff at Togiak NWR has monitored the population size and breeding performance of kittiwakes, murres and cormorants from shore-based plots at Cape Peirce annually since 1984. The field camp was still in operation at the time of this submission of information and no results were obtainable. For those interested in their results for the 2001 field season, a progress report summarizing this year's data and comparing to previous data will be available this winter; please contact Rob MacDonald, Wildlife Biologist, Togiak National Wildlife Refuge, P.O. Box 270 Dillingham, Alaska 99576 (907) 842-1966, ext. 314; rob_macdonald@fws.gov.

In addition to her editorial work on *Pacific Seabirds*, **Vivian Mendenhall** has been helping the Alaska office of the National Audubon Society with several seabird issues. She is working with **Olga Romanenko** to select important bird areas in the Bering Sea and Aleutian Islands, a first step in designating sites throughout the state for this international network.

Jim Lovvorn's laboratory at the University of Wyoming is continuing to work on Spectacled Eiders and the oceanography of their habitats at their wintering area south of St. Lawrence Island. During an icebreaker cruise in March 2001, they found that the eiders were eating almost exclusively the clam *Nucula radiata*, which has expanded since the 1970s to replace *Macoma calcarea* as the dominant clam. While diving in 40-60m of sub-freezing water, the eiders select *Nuculana* 18-24 mm long, which are probably >1 year old, while rejecting smaller young-of-the-year clams. If permits can be obtained, Samantha Richman will include Spectacled Eiders in her dive-tank work in summer 2001; these results will be used in simulation models to evaluate effects of changes in the benthic community on the energetics of Spectacled Eiders during winter. Because the costs of flight strongly affect food requirements, it is important to know how often and how far eiders must fly to new leads when the leads they are in close up within the highly mobile pack ice. Consequently, Master's student **Joseph Bump** is using synthetic aperture radar data to measure the dispersion and duration of leads under different weather conditions. In addition to studies of body mass and condition of eiders in late winter, Jim Lovvorn is also continuing stable isotope studies of food webs in their wintering area.

ALEUTIAN ISLANDS

Staff at the AMNWR continued their extensive work on monitoring and restoration of seabirds in the Aleutian Islands and throughout the refuge. This long-term seabird monitoring program includes collecting data annually on timing of nesting events, reproductive success, chick growth, prey identification, and other parameters for selected species of seabirds. Population indices are recorded at least every 3rd year. The data are summarized in an annual report posted on the Web at http://164.159.151.5/seabird/index.html. Ten sites on the refuge are designated for annual monitoring. Seabird monitoring work on Kasatochi and Buldir Islands occurred from May to September and was led by **Jeff Williams**. Field crews on Kasatochi Island included **Sarah Syria** and **Trever Joyce**, and those on Buldir Island included **Heather Moore, Peter Kappes,** and **Matt Grinnell. Vernon Byrd, Art Sowls**, and **Greg Howell** visited Bogoslof Island in September for a brief survey of kittiwake productivity and Tufted Puffin occupancy rates and prey identification. Vernon Byrd, **Dave Roseneau, Arthur Kettle**, and **Kevin Winker** (University of Alaska Fairbanks) conducted counts of ledge-nesters and guillemots at Amak Island in June. Amak was last surveyed 1973. Jeff Williams, **Lisa Sztukowski**, and **David Oleszczuk** also conducted seabird population and productivity work on Aiktak Island from May to September.

Ian Jones and **Fiona Hunter** continued their long-term studies of auklets. This year **Johanne Dussureault, Catherine Gray**, and Jones studied auklet survival and productivity in relation to Norway rat predation at Sirius Point, Kiska Island from May 25 to July 31, in collaboration with Art Sowls. **Martin**

Renner, Heather Major, Fiona Hunter, Ian Jones and **Julie Hagelin** worked on Least, Crested and Whiskered Auklet behavioral ecology and demography at Buldir Island from May 25 through August in collaboration with AMNWR.

To design a population monitoring protocol for crevice nesters, **Nikolai Konyukhov** (Russian Academy of Science, Moscow; konyukhov @gol.ru), **Vernon Byrd,** and **Kyle Juk** collected data on the activity patterns of Parakeet Auklets and Horned Puffins at Buldir Island during May and August. Konyukhov did in-depth studies of diurnal and seasonal patterns of colony attendance from 24 May until 4 September. Direct observations and digital time-lapse cameras were used to standardize population census method for both species. At Buldir Island, Parakeet Auklets have two peaks in their attendance pattern on the water near the colony. During the incubation period, numbers of birds in the nearshore area in early morning increased until about 8:00-8:30. Afterwards breeding birds went to the colony to exchange duties with their mates. The number of birds on the water stabilized from about 8:30 until 10:00. Later in the day numbers gradually decreased until there was a complete absence of birds in nearshore waters in early afternoon. In the evening the first birds arrived in nearshore waters about 19:30-20:00. Their numbers peaked around dusk, which was about at 23:00, and then afterwards they gradually decreased. As the breeding season progressed, the peak timing of birds present moved slightly towards the afternoon.

During the incubation period, Horned Puffins began to attend the breeding colony by 8:00 and numbers gradually increased throughout the day until about 19:00, when a peak in attendance began. This peak lasted until about 23:00. During the chick-reading period puffins also had a similar pattern; however, with the shortening of daylight hours, the morning presence at the colonies became later and the evening peak earlier.

As part of an AMNWR ongoing program to restore natural biodiversity within the Aleutian Islands, **Steve Ebbert** and Art Sowls led efforts to assess and eradicate introduced predators. In September a survey of the distribution of rats on Rat Island was made by Art Sowls, Jeff Williams, and Greg Howel, in preparation for possible future removal to restore native seabird populations. Surveys were also conducted in September to evaluate approaches for removing introduced foxes on Chuginadak, Avatanak, Tigalda, Sanak, and Chirikof Islands. Crews for these surveys included Steve Ebbert, Kyle Juk, and Matt Grinnell. Steve Ebbert and Jeff Williams surveyed introduced ground squirrels on Kavalga Island in June to plan an eradication effort.

In addition to assessment surveys, AMNWR crews continued fox eradication projects. Introduced arctic foxes were removed from 112,000-acre Amlia Island. In addition, seabird surveys were conducted, and long-term monitoring plots were established on nearshore islands on the northwestern side of Amlia. The islands of Tanaga and Little Sitkin were rechecked to be sure that no foxes remained after removal efforts in 2000. This work was conducted by Steve Ebbert, **Greg Thomson, Lisa Scharf, Jerry Maynard** (Wildlife Services [WS]), **John Spiegel** (WS), **Jerry Morrill** (WS), **Mark Pratt** (WS), **Michael Knapp** (WS), **and Sherman Anderson** (WS).

Rob Suryan, formerly of USFWS in Anchorage, is currently at Oregon State University, where his PhD studies will include albatrosses. Rob, **Greg Balogh** (USFWS), **David Hyrenbach** (Point Reyes Bird Observatory and Duke University), and **Dave Anderson** (Wake Forest University) are currently initiating a satellite telemetry study of Short-tailed Albatross. They will focus on environmental variables affecting marine habitat selection by albatross and how these variables may influence their potential interactions with commercial fishing fleets in Alaska.

Gulf of Alaska

AMNWR and the U.S. Geological Survey continued their Seabird Marine Mammal and Oceanography Coordinated Investigations (SMMOCI). This project includes recording seabird distribution at sea around annual monitoring sites, with simultaneous surveys of sea temperature, salinity, and biomass of prey via acoustic sampling. This year they surveyed transects near the Semidi Islands with a large crew that included **Don Dragoo, Vernon Byrd, Jeff Williams, Gary Drew, Michelle Wada, Doug Palmer, Brenda Holladay, Kitty Mecklenburg, Mike Palmer, Dave Pitkin, Barry Sampson, and Bill Henry. Scott Hatch** and **Martha Hatch** joined this cruise to the Semidi Islands, marking the 25th anniversary of their first visit to the Semidis in 1976. The main objective was to replicate counts of cliff-nesting birds (Northern Fulmars, Common and Thick-billed murres, and Black-legged Kittiwakes) on permanent plots. They also completed a cormorant census (Pelagic and Red-faced, both declining since late 1970's) on all nine islands in the Semidis. Among the fulmars on Chowiet Island, an unquantified but sizeable number of known individuals were still breeding in the same nest sites they used 25 years ago!

In July, staff from the AMNWR, the marine mammals branch of the USFWS, Ecological Services, and the National Park Service visited the Shumagin Islands. They conducted counts of Pigeon Guillemots and ledge-nesters at selected sites (the area was last surveyed in 1997). Crewmembers included Vernon Byrd, Jeff Williams, Don Dragoo, **Anne Morkill, Becky Howard, Rosa Meehan, Angie Doroff, Mark Schroeder**, and **Judy Alderson.**

As part of an ecosystem study designed to understand the food web for Steller sea lions in Chiniak Bay (Kodiak Island) and factors affecting it, demographic parameters and prey use were studied in Black-legged Kittiwakes and Tufted Puffins from May to September by **Leslie Slater, Bob Foy,** and **Dean Kildaw.**

The Migratory Bird Management office of USFWS, Kodiak National Wildlife Refuge, and AMNWR personnel cooperated to conduct a seabird colony survey on the south and east side of Kodiak Island during June. The purpose of the survey was to aid in determining population trends of terns, cormorants, and Pigeon Guillemots on portions of Kodiak Island. In addition, all other diurnal colonial nesting seabirds were censused in the study area. They surveyed 102 miles of shoreline and recorded approximately 51,400 birds and 850 marine mammals. A total of 70 seabird colonies were censused. Terns and cormorants appeared to have declined in the study area compared to historical estimates. Only 3 of the 14 historically documented tern colonies were active. Eight previously documented cormorant colonies were inactive and 6 new colonies were recorded. Pigeon guillemot breeding population numbers were comparable to previous censuses. The seabird colony data collected during this survey will be stored in the Beringian Seabird Colony Catalog database.

Monitoring of seabirds on East Amatuli Island in the Barren Islands was continued during July and August by Arthur Kettle, Leslie Slater, **Mari Ortworth, Michelle Wada**, and **Jessica Bussler.**

John Piatt, Mike Shultz, Tom Van Pelt, Ann Harding, Gary Drew (all from the Alaska Biological Science Center, US Geological Survey [ABSC]), and **Sasha Kitaysky** (University of Washington [UW]) were busy again in lower Cook Inlet, finishing off a 5 year study of survival and stress in murres and kittiwakes on Chisik, Duck, and Gull islands. Tom Van Pelt, **Ann Harding**, and **Mike Walgren** were on Chisik and Duck Islands for seven weeks in May and June, and **Mike Shultz** and **Sasha Kitaysky** made a brief follow-up visit in late August. Work focused on resighting of individually marked Common Murres and Black-legged Kittiwakes with concurrent measurements of chronology, productivity, and provisioning. Murres and kittiwakes also were captured for analyses of body condition and hormone levels. Beyond the field season, the main effort was toward archiving and analyzing data collected during the 1995-1999 Cook Inlet Seabird and Forage Fish Studies (CISeaFFS). **Stephani Zador** completed her MSc thesis on potential effects of Native egg harvesting on Glaucous-winged Gulls in Glacier Bay National Park and is pursuing a PhD at UW. **Suzann Speckman** is completing analyses of Cook Inlet data and working on her PhD dissertation at the School of Fisheries and Aquatic Sciences at UW. John Piatt and **David Irons** (USFWS) are heading up a project to compile historic data on the pelagic distribution of seabirds in the North Pacific, and **Shiway Wang** (USGS) has been tackling that project for much of the year.

Dave Roseneau and Leslie Slater visited the Chiswell Islands in September and conducted population counts of kittiwakes and murres to evaluate changes since the *Exxon Valdez* Oil Spill.

Scott Hatch and **Verena Gill** continued research on Middleton Island, including supplemental feeding of Black-legged Kittiwakes. **Naomi Bargmann** returned for a second summer on the island and supervised a field crew consisting of **Tom Bodey, Amanda Del Bene, Molly Dodge, Steven Hornstein,** and **Amanda Shahan.** As in 2000, kittiwakes and other species had an exceptionally productive year on Middleton, suggesting that oceanic conditions in the northern Gulf of Alaska have definitely taken a favorable turn. Throughout the year, we tracked the movements of Glaucous-winged Gulls and Pelagic Cormorants implanted with satellite transmitters in 2000, and we implanted four more individuals of each species in August 2001.

In March, **Bob Day** conducted his last at-sea surveys of seabirds and marine mammals for the GLOBEC study. This concluded 5 consecutive years of data collection on this project.

Michele Miller reports that the Alaska SeaLife Center in Seward has added a Black Oystercatcher and 19 Red-legged Kittiwakes to their aviary, which already housed 13 Tufted Puffins and 13 Pigeon Guillemots. Michele and her crew are interested in pursuing life-history studies of the kittiwakes, in addition to breeding, molting, and behavioral dynamics of all four species. They would like to add Horned Puffins and, possibly, Crested Auklets to the colony and are on the lookout for eggs or chicks of these two species. They are learning a great deal about waterfowl incubation and chick

rearing as well; they had the opportunity to hatch an Aleutian Canada Goose and 2 Spectacled Eiders, all of which are currently residing with captive waterfowl breeders.

PRINCE WILLIAM SOUND

David Irons and **Kent Wohl** continued their long-term studies of Black-legged Kittiwakes in Prince William Sound (PWS). **Kelsey Sullivan** (an MSc student at Rutgers University) and **Aly McKnight** conducted studies at the Shoup Bay colony. David Irons conducted census of populations and chick production in all colonies in PWS for the 18th consecutive year. The estimated nesting population of kittiwakes in PWS was the highest on record. Fledgling production was good, with production distributed a bit more evenly throughout PWS than in past years.

Bob Day continued long-term monitoring of seabirds and marine mammals in Prince William Sound for ExxonMobil Corporation during July and August, in conjunction with co-principal investigators **Steve Murphy** of ABR, Inc. and **John Wiens** of Colorado State University.

Kathy Kuletz initiated a study of Kittlitz's Murrelets in Prince William Sound from mid-May to early August 2001. Her field crew included **Karen Brennamen, Max Kaufman, Elizabeth Labunski**, and **Todd Trapp**. The goal was to get a more accurate population assessment of this species in PWS and to examine the potential for boat disturbance effects. Behavioral observations were combined with surveys of appropriate habitats and areas previously identified as Kittlitz's hangouts. Kathy and a core crew including **Karen Brenneman, Max Kaufman,** and **Liz Labunski** surveyed nineteen areas, primarily fjords with glacially influenced waters. The apparent population decline of Kittlitz's Murrelets has been a concern of USFWS, and there is added emphasis on obtaining abundance, habitat use and diet information on this species because of a recent petition to the USFWS to list the species as endangered. Kathy is currently working on a Status Assessment of the Kittlitz's Murrelets, in conjunction with **John Piatt** and **Tom Van Pelt** (ABSC).

Of particular interest during the 2001 season in PWS was the apparent abundance of capelin, which attracted unusually large foraging aggregations of Marbled Murrelets and other birds. Capelin were observed and sampled even in the northern fjords of PWS, where capelin had not been observed during earlier EVOS studies.

Just as Kathy's Kittlitz's study ended, the 170 ft tender *Windy Bay* struck a charted reef and sank in northern PWS. This precipitated the *Windy Bay* Oil Spill, spilling 35,000 gallons of diesel fuel and about 500 gallons of other petroleum products over more than 100km^2. A variety of seabirds and marine mammals used this area, the most abundant being marbled Murrelets. The Kittlitz's survey crew conducted post-spill surveys, providing information on numbers and species at risk. (An interim report is available from Kathy Kuletz, USFWS, 1011 E. Tudor Rd., Anchorage, AK 99503, USA). Because portions of the affected area overlapped with the Kittlitz's surveys, we were able to compare immediate pre- and post-spill seabird abundance and distribution. Only seven oiled carcasses were found, but the survey crew observed several hundred Murrelets in oil sheens. Six of the dead birds were Marbled Murrelets, and four of those were juveniles. The spill occurred during peak juvenile murrelet abundance in PWS, which likely contributed to their disproportionate susceptibility. Just a week earlier, a fishing vessel in the same general area struck an iceberg and sank, releasing 3,000 gallons of fuel. Both of these events occurred in good weather and daylight, highlighting the need for better rules or enforcement in heavily traveled inland waters.

Rob Suryan spent the first part of the year working on a synthesis for the post-*Exxon Valdez* Oil Spill (EVOS) studies of Black-legged Kittiwakes in Prince William Sound. He then migrated south during March through July to work at Oregon State University with Dan Roby (see Oregon/Washington Report) and Short-tailed Albatrosses (see Aleutians section of the Alaska report). During his PhD studies also will continue to analyze EVOS kittiwake and forage fish data.

David Ainley (H.T. Harvey & Associates), **Glenn Ford** (RGF Consulting), with collaboration from **David Irons** (USFWS, Anchorage), **Rob Suryan** (OSU), and **Evelyn Brown** (University of Alaska) are studying the lack of regional population growth of Black-legged Kittiwakes in face of compensatory increase and decline of individual colonies within Prince William Sound.

SOUTHEAST ALASKA

Staff from AMNWR continued seabird monitoring at St. Lazaria Island during May through September. Persons involved in this work included **Leslie Slater, Vicky Vosburg, Kendra Womack, and Anissa Berry-Frick. Tony DeGange** (USFWS, Ecological Services) and **Gilia DeGange** also had an opportunity to work on St. Lazaria this summer. As part of a cooperative program with Minerals Management Service to document base levels of heavy metals

and other contaminants in long-lived seabirds, crews collected murre eggs.

In Glacier Bay National Park (GBNP), **Mike Litzow** and **John Piatt** continued their forage fish studies. With **Chris Gabrielle** (GBNP), they also initiated a study of humpback whale foraging behavior in the Park.

SEABIRD BYCATCH ISSUES

Kim Rivera (formerly of the Alaska Region of NMFS) was appointed National Seabird Coordinator of NMFS. She will continue to be based in Juneau. Her tasks will include coordinating regional implementation of the NPOA and of Executive Order (EO) 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds" (issued January 2001). USFWS and NMFS are currently developing a Memorandum of Understanding, as required in EO 13186. Kim reports that NMFS will revise existing regulations for seabird deterrent measures in the longline fisheries off Alaska. Revisions will be based on the results and recommendations of the 2-year study by the Washington Sea Grant Program (WSGP) on the effectiveness of deterrents. The North Pacific Fishery Management Council (NPFMC) will consider the WSGP recommendations at the Council's October meeting and make its recommendations to NMFS.

The International Pacific Halibut Commission submitted a requested report to NMFS, "A feasibility study that investigates options for monitoring bycatch of the Short-tailed Albatross in the Pacific halibut fishery off Alaska." NMFS will consider this report in its development of a monitoring plan for the halibut fishery.

The United States finalized and made available in February 2001 its "National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries" (NPOA). This plan was developed jointly by NMFS and USFWS and calls on NMFS regions to assess longline fisheries to determine if a seabird bycatch problem exists. If so, specific measures are to be carried out, including prescription of mitigation measures, outreach, education, and regular reporting of bycatch. The NPOA can be found at http://www.fakr.noaa.gov/protcedrsources/seabirds/npoa/nopa.pdf.

Analysts at the NMFS Alaska Fisheries Science Center continue to refine protocols for seabird bycatch estimates in the Alaska groundfish fisheries. Average annual estimates for 1993-1999 have been calculated, and data for 2000 are currently being analyzed.

In 2001, NMFS made available 2 major draft Environmental Impact Statements that include sections on the effects of the proposed actions on seabirds. The first is the Draft Programmatic Supplementary Environmental Impact Statement (SEIS) on the Alaska Groundfish Fisheries, which was issued in January. The Draft Steller Sea Lion Protection Measures SEIS was issued in August. Both are available on the NMFS Alaska Region website at http://www.fakr.noaa.gov/sustainablefisheries/ea/default.htm. For a more detailed timeline of NMFS Alaska Region seabird activities and issues, refer to http://www.fakr.noaa.gov/protectedresources/seabirds/timeline.htm and http://www.fakr.noaa.gov/protectedresources/seabirds.html.

Kent Wohl, Kathy Kuletz, and David Irons worked to allocate $575,000 of congressional funds directed toward issues of seabird bycatch in Alaska. Nine projects were funded via contracts or agreements with other agencies and universities. These projects focus on three areas: education and outreach to the fishing industry; research and analysis on seabirds affected by bycatch, in particular their demographics, distribution, and habitat use; and improving the data collected on seabird bycatch by fishery observers.

Kathy Kuletz continues to work on seabird-fisheries issues with **Greg Balogh** (Western Alaska Ecological Services, USFWS) and Kim Rivera. Kim and Kathy have been writing the seabird and ecosystem sections of the SEIS for the Steller's sea lion and participating in the North Pacific Fisheries Management Council meetings. **Tony DeGange** is the USFWS representative on the NPFMC. Tony, along with Kim, Greg and **Ed Melvin**, has been heavily involved in working with longliners to implement seabird avoidance measures.

FAR-EASTERN RUSSIA

Summarized by **Nikolai Konyukhov**

Yuri Artukhin (artukhin@mail.iks.ru) carried out counts of seabirds at sea on a route along the Kurile Islands from 23 June until 21 July 2001. In addition, numbers and species composition of seabirds at some colonies were determined. Data were added to the previous year's counts, which will be published as "Cadaster of Seabird Colonies of the Kurile Islands."

Nikolai Konyukhov (konyukhov@gol.ru) did studies of diurnal and seasonal patterns of colony attendance in the Parakeet Auklet and Horned Puffin on Buldir Island, Aleutian Islands, USA, from 24 May until 4 September. **Victor Zubakin** worked on Least and Crested Auklets and

assisted with monitoring of other species on St. Lawrence Island, USA. Details of both projects are given in the Alaska report.

CANADA

Summarized by **Ken Morgan**

British Columbia—Marbled Murrelets

Russell Bradley (Simon Fraser University and Canadian Wildlife Service [CWS], Centre for Wildlife Ecology [CWE]) is continuing his MSc work on the breeding ecology of radio-marked Marbled Murrelets in Desolation Sound. His work involved documenting the use of nesting sites on cliffs and in deciduous trees, male sex-biased nest visitation during chick rearing, and analyzing the ability to infer demographic parameters from radiotelemetry data. Currently, his focus is on evaluating effects of marine and terrestrial habitat use on reproductive success in individual murrelets, using radio-marked birds. A recent publication is: Bradley, R.W. and F. Cooke, "Cliff and deciduous tree nests of Marbled Murrelets in southwestern British Columbia," Northwestern Naturalist 82:52-57, 2001.

Alan Burger (University of Victoria [UVIC]) continues to work on murrelets and has completed a review of the biology of the species as part of the Canadian Marbled Murrelet Conservation Assessment. He also continues fieldwork on murrelets on southwest Vancouver Island in collaboration with **Connie Miller-Retzer** (BC Ministry of Water, Land and Air Protection [MWLAP]). The goal of current research is to assess the effects of fragmented forest patches on the relative densities of murrelets and their predators. **Michelle Masselink** (UVIC) completed her MSc thesis on Steller's Jay as a nest predator of murrelets (supervised by Burger).

Trudy Chatwin (MAWLAP) writes that the *Nestucca* Oil Spill Damage Trust Fund has supported a radar survey by **Irene Manley** of Marbled Murrelets on the northwest coast of Vancouver Island. Murrelets were counted in 15 watersheds, and broad-scale habitat relationships were compared to numbers of pre-dawn murrelets.

Monica Mather completed "Marbled Murrelet nesting habitat: An evaluation of identified wildlife management strategy and landscape unit planning policy for protecting old-growth nesting habitat in selected Vancouver Island landscape units." Chatwin summarizes this report as follows: BC initiated the Identified Wildlife Management Strategy (IWMS) to protect threatened and endangered species from effects of forest and range practices. The IWMS recommends that murrelets be protected in Wildlife Habitat Areas (WHAs) amounting to 10-12% of their originally suitable forest habitat. However, the Landscape Unit (LU) Planning policy regulates the allocation of these WHAs to reduce the impacts to the forest industry. The purpose of the project was to determine the outcome of implementing IWMS and LU Planning policy as a means of protecting murrelet nesting habitat. The amount of suitable nesting habitat was compared to the amount allowed under LU policy in 8 LUs on Vancouver Island. Analysis of suitable murrelet nesting habitat using GIS showed that with the exception of parks, there were few areas that met the 200-ha size criteria for WHAs. Often 10% of the forest land was potentially suitable habitat, but it was so fragmented that it was impossible to locate 200-ha polygons. In the 8 LUs examined using IWMS and LUP Guidelines, it was possible to protect only 1.6% of suitable habitat. Using the existing LUP policy and the IWMS requirements in these LUs, murrelet conservation would not be adequate.

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Trudy Chatwin is also working on reserve planning in Clayoquot Sound. According to the Clayoquot Scientific Panel recommendations for ecosystem planning, Chatwin recommended a series of murrelet reserves with interior nesting habitat of excellent and good habitat suitability. These reserves were based on Habitat Suitability modelling and mapping conducted by **Volker Bahn** and **Dan Sirk**, then verified by low-level helicopter flights to evaluate nesting platforms.

Sean Cullen reports that he completed the second field season of a radar inventory of Marbled Murrelets entering watersheds in southwestern BC, under contract for the BC Provincial Government. Future analysis will

focus on the relationship of habitat parameters to murrelet distribution at the landscape scale.

Under contract to CWS, **Tracey Hooper** prepared "Research and inventory of the Marbled Murrelet (*Brachyramphus marmoratus*) in British Columbia, 1991-99" (currently in draft). Guided by the National Marbled Murrelet Recovery Team, Hooper prepared a summary of all murrelet inventory and monitoring work done in BC from 1991 through 1999. The report includes chapters on murrelet biology, demographics, nesting behavior and habitat, marine populations and habitat, terrestrial populations and habitat, and assessments of current monitoring and inventory methodologies. The information was summarized by coastal regions (i.e., Central Coast, South Coast, and Vancouver Island) to show possible regional trends in the data and to identify information gaps.

Falk Huettmann investigated the nesting habitat selection of murrelets in Desolation Sound, along with **Russell Bradley, Emmanuelle Cam, Fred Cooke, Laura McFarlane-Tranquilla, Lynn Lougheed,** and **Cecilia Lougheed** (all CWE). The project used 84 murrelet nests that had been located by radio-telemetry. Sites were geo-referenced and overlaid in ArcView, using a Digital Elevation Model (slope, elevation and aspect) and compiled 1:20,000 scale Forest Cover maps. Multivariate generalized linear models were built using murrelet nests stratified by forest cover. The habitat characteristics corresponding to nest locations were compared to those of an equal number of randomly drawn locations from the same strata.

Diane Evans Mack and **Martin Raphael** of the US Forest Service collaborated with the SFU/CWS murrelet research crew to investigate the social behavior of known non-nesting and incubating murrelets in Desolation Sound. The objective was to correlate group size on the water with nesting status to devise an index to the proportion of the population that is nesting that could be applied to at-sea survey data.

Peggy Yen (CWE) and **Huettman** undertook a large-scale multivariate GIS modeling study of the marine distribution of murrelets during the breeding season. The role played by the marine environment in the distribution and abundance of murrelets is not well understood. Yen and Huettmann compiled many GIS data sets relevant to the marine environment of BC, and they built statistical models to predict the relationship between murrelets and marine habitats. Several advanced modeling algorithms (e.g., Generalized Multivariate Models, Classification and Regression Trees, Multiple Adaptive Regression Splines, and Neural Networks) were evaluated to provide best predictions for marine distribution and abundance.

Yen, Huettmann, and others from CWE evaluated marine and terrestrial habitats with large-scale GIS models. It is currently not known whether distribution and abundance of murrelets during the breeding season is affected by terrestrial habitat, marine habitat, or both. They used GIS models with three spatial scales ("bins" of 5km, 25km and 50km) to investigate this question in detail. Several multivariate model scenarios were built using nesting evidence, marine abundance, and occupied detection surveys. They will evaluate which model provides the best link with coastal habitat, and which of the marine and terrestrial habitat features provide the best explanation for nesting murrelets across spatial scales.

Paul Jones notes that during the past year most effort was directed towards the completion of his report "The Marbled Murrelets of the Caren Range and Middlepoint Bight," published by Western Canada Wilderness Committee (WCWC). The report is an account of ten years of research into murrelets in a subalpine forest (now set aside as a BC Provincial Park), as well as research into this species in the marine environment. It is available for $34.95 (Canadian dollars) from Jones at mrjones@axion.net, or from WCWC, 227 Abbott St., Vancouver, BC, Canada V6B 2K7. In addition, volunteer research continued in the ancient forests of the Caren Range, though on a more limited scale than in past years, and at-sea surveys in Middlepoint Bight were maintained. The numbers of murrelets seen on the water during the August/September moult suggested that 2001 was a good breeding year.

Bernard Schroeder (with assistance from **Chad Henderson**) conducted a murrelet detection project at various locations in Barkley Sound, Vancouver Island, between late May and 27 July 2001 Most work constituted the first year of surveys to satisfy protocol requirements of the Resources Inventory Committee (RIC) for a present/not-detected inventory. The intact upper portion of the Brand Valley was monitored for a fourth consecutive year for nesting activity. The information will assist resource managers in accounting for murrelet habitat requirements in forest development plans. The inventory was focused on determining murrelet activity in areas managed by the small-business forest enterprise program.

In the winter and spring, **Bernard Schroeder** continued work on a habitat evaluation project for MAWLAP in various Landscape Units or watersheds near Barkley Sound. Potential murrelet nesting habitat was delineated and rated using a combination of air photo and forest cover mapping review. Aerial assessments were conducted by helicopter as a broad scale ground-truthing method, while more specific ground-truthing was done by mensuration of potential nesting habitat on a 1-ha transect plot. The information is being used to prioritize areas for further investigation and to assist habitat managers with Old Growth Management Area and Wildlife Habitat Area selection.

Laura McFarlane-Tranquilla, Tony Williams and **Fred Cooke** (all CWE) are using physiology to examine the breeding chronology and proportion of egg-producers in Marbled Mur-

relets in Desolation Sound. Vitellogenin (VTG) is a lipophosphoprotein that circulates in the plasma of egg-producing birds prior to laying. They are using VTG to describe the length and duration of the egg-producing phase during two breeding seasons, the differential detection of egg producers among birds caught by two methods (dipnetting and mistnetting), and the proportion of egg producers caught. Eggs were produced in Desolation Sound for a 70-days period (late April to early July). The proportions of egg producers and mean dates and range of egg production did not differ between years. Identifying egg producers using VTG allowed accurate prediction of the first appearance of juveniles in the study area.

Another study by McFarlane-Tranquilla, with Bradley, Cooke, and Williams, is evaluating use of the brood patch for assessing a bird's breeding status. When murrelets are caught away from the nest, assessment of their breeding status is often guesswork, since there is no information on nest site occupation or presence of egg or chick. McFarlane-Tranquilla et al. are examining brood patch development in relation to the timing of breeding, using VTG and inferring the onset of incubation by radiotelemetry. They have found that some birds acquire fully developed brood patches as long as 60 days before egg-laying. Given these results, they question the close timing that has been assumed between brood patch development, egg development and onset of incubation. Researchers are cautioned about using brood patches as descriptors of breeding activity and breeding success.

McFarlane-Tranquilla (with Bradley, Williams, and Cooke) examined whether catching Murrelets disrupted breeding. They found that some aspects of capture, handling, and radio transmitter attachment affect the breeding decisions made by Marbled Murrelets. Many supposed "nonbreeders" were found to be females that were actually producing eggs at the time of capture, suggesting a failed breeding attempt. "Failed" breeders made up 34% (12/35) of a sample of females. Failed breeders also were captured later in the season than successful breeders (mean 18 days later). It is likely that some female murrelets experienced nest failure due to investigator disturbance, but also that there are many factors involved in nest failure, which are not easy to examine independently. Marbled Murrelets that carried a radio transmitter throughout the breeding season and bred successfully may have experienced a delay in the initiation of incubation, also due to investigator influence. However, not all birds delayed breeding, implying that a number of factors influence vulnerability in Marbled Murrelets.

John Ryder (CWE) notes that during 2001 the Marbled Murrelet Research Project completed fieldwork at two sites—Clayoquot Sound and Desolation Sound. The major focus was the telemetry study of two populations. Cooke continued his role as project leader while **Nadine Parker** completed her first season as project coordinator. Huettmann and Cam continued analysis of nesting habitat and demographic data. A total of 70 adult and 9 juvenile murrelets were captured by dipnetting in Clayoquot Sound. Sixty-eight transmitters were attached to adult birds, resulting in a total of 12 nests located, including two that were actually found while the adults were in the chick-rearing phase. Of note is the fact two of the nesting birds were detected on both the west and east coasts of Vancouver Island. The first juvenile in Clayoquot Sound was captured on 6 June.

A total of 143 adult and 47 juvenile murrelets were captured in Desolation Sound. Seventy-five transmitters were attached to adult birds, and 37 nests were found, including a re-nest. Also included in this sample of nests was a bird that laid an egg upon capture and then went on to nest. The first juvenile was captured on June 23. Forty-five transmitters were attached to captured juveniles with the aim of determining juvenile survival.

BRITISH COLUMBIA—OTHER MARINE BIRDS

Alan Burger is analyzing several years of data from vessel transects made over the shelf and in nearshore waters off southwest Vancouver Island. The study aims to document the distribution and abundance of all local seabirds, and to examine the effects of physical factors and prey distribution.

Trudy Chatwin notes that since the 1990s, nesting populations of Double-crested and Pelagic Cormorants have declined in the Strait of Georgia. In 2000, a survey of 34 Pelagic and 17 Double-crested Cormorant colonies (including historic sites) was conducted, funded by the *Nestucca* Oil Spill Damage Trust Fund and the Habitat Conservation Trust Fund. Overall, counts of Pelagic Cormorants were down by half and Double-crested Cormorants had declined by two-thirds since 1987. Pelagic Cormorants showed a significant decline in total nests between 1959 and 2000, although an increase was noted in the population at Mitlenatch Island. At two Double-crested Cormorant colonies there were significant increasing trends. However, the increases did not offset the dramatic declines at other locations. The most profound declines were seen at Mandarte and Great Chain Islands, where the majority nested in the 1980s. In 1983, Mandarte supported 1,100 pairs of Double-crests, whereas in 2000 only 215 nests were observed. The declines may be related to a combination of Bald Eagle disturbance, changes in prey availability, and human disturbance.

Chatwin also reports that **Tanya Giesbrecht** completed a report entitled, "The Effect of Bald Eagle and Boat Traffic on Nesting Double-crested Cormorants in the Strait of Georgia." Because boat traffic and Bald Eagle disturbance are suspected to be the cause of declines in cormorant nesting populations in the area, Double-crests were monitored at four sites (Chain, Mandarte, and Five-fingers Islands and pilings near Crofton) from late May to late August. Disturbance caused by

eagles, fishing boats, tourist boats, and kayaks were monitored. Eagles caused cormorants to flush when they approached within 10m of a cormorant nest, whereas the cormorants were not observed to vacate their nests as a result of any type of boat disturbance. Despite the apparent lack of evidence that boaters caused colony disturbance, **Chatwin** states that notices were posted at marinas, kayak rental outfitters, ferry terminals and park notice boards, suggesting that boats should not approach closer than 30m from a colony.

Under the direction of **Ron Ydenberg** and **Doug Bertram** in April 2001, **Carina Gjerdrum** (CWE/SFU) completed her MSc project on Tufted Puffin breeding and provisioning strategies. Gjerdrum's study, which was conducted on Triangle Island, examined the timing of breeding, nestling growth, fledging behavior, nestling diet, and parental provisioning. Using a supplementary feeding experiment, she found support for the hypothesis that nestling food demand regulates parental provisioning effort in Tufted Puffins. Results also suggest that the timing of fledging may be influenced by parental behavior late in the nestling period.

Ken Morgan (CWS), with the assistance of **Mike Bentley, Mike Force,** and **Mike Henry** (UBC) continues to study the at-sea distribution of seabirds. To date 14 surveys of a 1,500-km offshore transect have been completed; portions of these data are being used by **Michael Dunn** (CWS) to help assess the size and shape of a potential Marine Protected Area centered on Triangle Island. **Morgan** also continues collaborating with **Bill Sydeman** (Pt. Reyes Bird Observatory) and **David Hyrenbach** (Duke Marine Laboratory); they are examining long-term survey data sets from the California Current System to identify biological hotspots.

John Ryder reports that the Triangle Island research station completed its 8th consecutive year of seabird monitoring and research. In February 2001 **Doug Bertram** departed as project coordinator to work with the CWS as Chair of the National Marbled Murrelet Recovery Team. Ryder served as the interim project coordinator until July, and in August **Mark Hipfner** replaced Bertram as director of research for the project, taking the position of Seabird Population Biologist with the CWS (Delta, BC) as well as Research Associate at SFU.

Field crews were present on Triangle Island from 16 April to September 4. **Krista Amey, James Burns** and Mark Hipfner took turns running the field camp through the season. Postdoctoral fellow **April Hedd**, who had been involved with the Triangle project for two years, returned to St. John's, Newfoundland in December 2000; on 21 January 2001, **Joshua Hedd** was born. April is still actively involved in the Triangle project, analysing data and writing papers. **Mark Drever,** who also was affiliated with the Triangle Island research project for 5 years, began a PhD at the University of Guelph. **Gwylim Blackburn,** under the direction of Ron Ydenberg, Doug Bertram and Mark Hipfner, completed the first season of a MSc project on Tufted Puffins. **Jean Francois-Aublet** and **Jean-Francois Savard** returned to Triangle for a second season. Other research assistants and volunteers at Triangle included **Jeremy Allison, Martin Grimm, Tim Lash, Kaj Kampp, Jenny Rock, Chris Chutter** and **Vince Barter.**

As in previous years, the project examined the phenology, reproductive performance, nestling diet AND development, and provisioning rates of Cassin's Auklets, Rhinoceros Auklets, Tufted Puffins and Common Murres. A mark/recapture banding program to examine demography of Cassin's and Rhinoceros auklets continued, as did the program to capture and band adult Tufted Puffins later in the season. Cassin's Auklets, Rhinoceros Auklets, and Common Murres experienced good breeding success, although lower than in 1999 and 2000. Tufted Puffins initially appeared to be on their way to a third successful breeding season, but most nestlings died before they reached fledging age.

The third (and final) season of a radio-telemetry study to examine the foraging ecology of Cassin's Auklets at Triangle was completed in 2001. Transmitters were affixed to 38 adults during the chick-rearing period, and 4 aerial surveys to locate the radio-marked adults were conducted by **Sean Boyd** (CWS) and Ryder on 5-7 June. It was found that the auklets were foraging northwest of Triangle Island, some as far as 110km from the colony. **Ken Morgan** (CWS) arranged for observers **Mike Bentley** and **Russ Bradley** to conduct at-sea surveys around Triangle in support of the telemetry work. Partners in this collaborative investigation of marine predator/prey relationships and distribution around Triangle Island include **Dave Mackas** and **David Welch** at Fisheries and Oceans Canada (DFO). The *Nestucca* Oil Spill Trust Fund supported the study.

Joanna Smith spent the spring on Limestone Island, Haida Gwaii (the alternate name for the Queen Charlotte Islands), managing the field camp for Laskeek Bay Conservation Society (LBCS). The LBCS, with **Tony Gaston**, studies Ancient Murrelets, Black Oystercatchers, Glaucous-winged Gulls, and the at-sea distribution of Marbled Murrelets and other seabirds. **Stephanie Hazlitt** (Bird Studies Canada) returned to Laskeek Bay to collect more information on the philopatry of Black Oystercatchers. Working with LBCS and Gaston, Hazlitt is looking at the long-term trends of nest site use by oystercatchers. The possible lifting of an oil and gas moratorium in BC has, once again, drawn attention to the sensitive nature of seabird colonies in Haida Gwaii. The data gathered by LBCS will provide a valuable baseline for changes in populations over time.

NORTH, EAST, AND INTERIOR CANADA

Grant Gilchrist and **Myra Robertson** (CWS, Yellowknife) and **Greg**

Robertson (CWS, Newfoundland), in partnership with the Nunavut Wildlife Management Board and the Polar Continental Shelf Project, are examining the survival of Common Eider. Recent evidence suggests that numbers of Common Eiders in the eastern Canadian Arctic are declining. Information on the survival, annual reproduction, and causes of death is essential for effective management and conservation of these sea ducks.

Banding of Common Eiders of the *borealis* subspecies was initiated in 1996 at a colony in East Bay, Southampton Island, Nunavut. Males and females were caught in a 100m long salmon net as they flew around the colony prior to nest initiation. Females were also caught in large funnel traps as they left the colony with broods in early August. To date, a total of 1,179 females, 689 males, and 711 ducklings have been banded. Eiders are resighted at the colony from observation blinds overlooking freshwater ponds and nesting areas. Preliminary estimates of annual survival rates using the program MARK are as follows (± SE): 72.7±0.06, 65.7±0.05. Thirty bands also have been recovered from wintering populations (22 in Greenland, 7 in Atlantic Canada, and 1 in Nunavut), illustrating the importance of the Greenland harvest to the Canadian breeding population.

Mark Hipfner (U. of Ottawa) spent the early part of summer 2001 on Prince Leopold Island, continuing postdoctoral research on the effects of environmental changes on high arctic seabirds under the direction of Tony Gaston and Grant Gilchrist.

FISHERY ISSUES

Joanna Smith, in collaboration with **Ken Morgan** and DFO, continues to investigate seabird bycatch in the longline and gillnet fisheries of BC. The project's focus is to assess the status of seabird bycatch in BC using data collected through existing observer programs in the fisheries. Included in this study are the demersal longline fisheries for halibut, rockfish, and sablefish and the coastal gillnet fishery for salmon, where seabird bycatch data have been collected during the last three years. Related projects include developing a standardized seabird identification curriculum for fisheries observer courses and examining birds salvaged from gillnet fisheries. Seabird bycatch information from the Pacific region will assist the National Seabird Bycatch Working Group with their development of a National Plan of Action for the Reduction of Seabird Bycatch in longline fisheries.

POPULATION GENETICS

Vicki Friesen (Queen's University) and her laboratory are using molecular methods to study population and conservation genetics of a variety of seabirds. **Matt Atkey** is examining the genetic population structure of Leach's Storm-Petrels for his undergraduate honors thesis. Currently, variation in the cytochrome b mitochondrial locus is being screened to compare Atlantic and Pacific populations. DNA samples from colonies in Alaska (**Leslie Slater**, USFWS), Mexico (**Bob Pitman**, Southwest Fisheries Center), and Norway (**Tycho Anker-Nilssen**, Norwegian Institute for Nature Research) also will be included in this study. In June, Atkey joined **Harry Carter** (USGS), **Josh Adams** (Moss Landing Marine Laboratory) and **Darrell Whitworth** (Humboldt State University) in the Channel Islands of California to collect samples and to help with field work on Cassin's Auklets and Xantus's Murrelets.

Mitochondrial DNA variation suggests some level of genetic introgression between Common and Thick-billed Murres. As part of a larger study of population structure in four alcid species in the north Pacific by **Friesen's** group, undergraduate **Sherri Leung** investigated hybridization between these species by examining variation in nuclear introns. A sample of 30 Thick-billed Murres from the Gulf of Alaska revealed no Common Murre alleles at five intron loci. These preliminary results suggest that hybridization does not occur with high frequency.

Andrea Smith is continuing research on population differentiation and speciation in the Band-rumped Storm-Petrel for her PhD research. Preliminary genetic work conducted by undergraduate student **Vinay Lodha** in 1997 indicated that populations breeding in hot and cool seasons in the Azores are reproductively isolated and probably represent cryptic species. This is further supported by morphological and ecological evidence (Monteiro and Furness, Phil. Trans. R. Soc. Lond. B 353: 945-953, 1998; M. Bolton, unpubl.). The current study is expanding the focus to include global populations of the Band-rumped Storm-Petrels, and to test the evolutionary origin of temporally segregated populations. DNA samples from colonies in the Azores, Cape Verde, and Madeira are currently being screened for genetic variation using the mitochondrial control region. In the past year, Smith traveled to the Azores in October 2000) and the Galápagos in May 2001 to collect additional DNA samples. She also made morphological measurements and recorded vocalizations of seasonally segregated breeding populations. Future field work is planned for Ascension Island (October 2001) and the Galápagos (November/December 2001). Samples are also expected from colleagues collecting in the Canary Islands (**Mark Bolton**, University of Azores), Hawaii (**Tom Telfer**, Hawaii State Division of Forestry and Wildlife), and Japan (**Yutaka Watanuki**, Hokkaido University). Microsatellites will be screened as well to provide further information on the genetic structure of Band-rumped Storm-Petrel populations worldwide.

Tammy Steeves is continuing her PhD research on mechanisms of population differentiation and speciation in the Masked Booby species complex. She is using molecular genetic markers to (1) assess the genetic basis of taxonomic designations of masked boobies worldwide, (2) test whether the divergence of any of these species or sub-

species was associated with a founder event, and (3) test whether gene flow at the time of divergence was restricted by physical and/or non-physical barriers. In past years, Steeves and/or colleagues have collected DNA samples. Steeves is currently planning to collect samples from islands in the south Atlantic (Ascension Island, October 2001) and in the east Pacific (San Benedicto Island and Clipperton Island, April 2002). Additional samples will also be collected by colleagues in the E. Pacific (**Bernie Tershy**, University of California at Santa Cruz), central Pacific (**Beth Flint** and **Chris Depkin**, USFWS), central Indian Ocean (**Charles Anderson**, Marine Research Centre, Republic of Maldives) and west Indian Ocean (**Adrian Skerrett**, Island Conservation Society, Seychelles).

As part of a larger study to examine the relative importance of physical barriers to gene flow in the divergence of tropical seabird populations (see above), **Heather McNally** and **Michael Kim** examined levels of mitochondrial and nuclear genetic variation in samples collected from Brown Boobies and Red-footed Boobies in Pacific and the Caribbean. Their results, combined with those obtained by Steeves for Masked Boobies, suggest that the Isthmus of Panama is an effective barrier to (female-mediated) gene flow. The Eastern Pacific Barrier, however, seems to have played less of a role in the diversification of these species.

WASHINGTON AND OREGON

Summarized by Jan Hodder

at 206-542-1275 for further information and results associated with this effort.

Julia Parrish (University of Washington [UW]), assisted by her graduate students and research technicians, monitored three Common Murre colonies on the coast of Washington

WASHINGTON— SEABIRDS OTHER THAN MARBLED MURRELETS

Lora Leschner is working on a report for the US Fish and Wildlife Service (USFWS) on "Seabird Research in Washington, 1980 to 2001," to be included in the Pacific Region Seabird Conservation Plan. She will be contacting seabird researchers about their current work and their publications. Lora is also working on a pilot project to use volunteer ornithologists to monitor shorebirds in the estuaries of northern Puget Sound. This project is part of the National Shorebird Monitoring Plan. In addition to monitoring, she will work with volunteers to get elementary school kids involved in the Shorebird Sister Schools program.

The Washington Department of Fish and Wildlife (WDFW),. which owns most of the Skagit estuary shoreline and land in Padilla Bay, is working with Ducks Unlimited on habitat management projects that benefit both waterfowl and shorebirds.

David Nysewander, Joe Evenson, Bryan Murphie, and **Tom Cyra** are continuing several monitoring studies associated with the marine bird component of the Puget Sound Ambient Monitoring Program (PSAMP). PSAMP is a state and federal interagency effort in Washington State, which monitors various components of the inner marine waters that extend east from the mouth of the Strait of Juan de Fuca, north into the San Juan Islands and Georgia Basin, and southwards into Puget Sound proper.

Winter aerial surveys of marine birds and waterfowl were conducted again in December 2000 and January 2001. Data and map products are available in ARC GIS format for the 1992-2001 winter and 1992-1999 summer surveys. These are avialable from the and Oregon in 2001: Tatoosh Island, Yaquina Head, and a new site, Point Grenville in Copalis National Wildlife Refuge. An eleventh year of data was added to the long-term monitoring study of breeding, predator-prey interaction and provisioning at the Tatoosh Island colony. Thanks to a scarcity of Wildlife Resources Data Section of WDFW in Olympia through **Shelly Snyder** at 360-902-2483. Restricted funding prevents continuation of the summer aerial surveys, but the 2001-2002 winter aerial surveys will be continued, in part due to continuing concern about the decline of many marine bird species in this region (13 of 18 examined) over the last 20 years. The largest declines are associated either with fish-eating species like Western Grebes that prey upon forage fish, or with species like scaup and scoters that feed on eggs of forage fish. Forage-fish eggs may be required for acquisition of sufficient fat reserves for migration and initiation of reproduction, and availability of this food is declining.

The PSAMP program, USFWS, and volunteer groups have also just completed the third year of boat-based censuses of Pigeon Guillemots at breeding sites. The surveys are made during May of each year. The effort this year extended the standardized protocol and timing of surveys to all sites that were checked last year, plus a few that were missed in 1999. The surveys provides a more standardized methodology for monitoring selected breeding species found throughout all of the greater Puget Sound and will entail at least a five-year collaboration. Contact **Joe Evenson** at 360-902-2524 for further information on this effort.

The PSAMP team also conducted aerial surveys during June 2001 focusing on Great Blue Herons. This was part of a pilot project coordinated by **Don Norman**, in collaboration with ground-based volunteer observers, to evaluate the feasibility of monitoring great blue heron numbers from aerial surveys on their marine feeding areas in northern Puget Sound. Contact Don

Bald Eagles and an abundance of forage fish, murre attendance and reproductive success reached all-time highs. All surface nesters on the island did well, including Glaucous-winged Gulls, Pelagic Cormorants, and Double-crested Cormorants. **Tom Good**, although busy with his new appoint-

ment on the salmon recovery team at NMFS, managed to find time to pursue his study of factors affected gull breeding success at Tatoosh Island. **Nathalie Hamel** completed her last year of data collection for her master's degree at UW. She headed the radio-tracking project and collected information on the foraging distribution and post-breeding migration of Tatoosh Island murres. Once again, the murres are heading into the Strait of Juan de Fuca and Puget Sound. Thanks to everyone in the Tatoosh field crew, including **Colin French, John Huckabee, Kip Parker, Erin Hagen, Emily Meredith, Jen Convy,** and **Kate Litle** for their invaluable assistance.

Meanwhile, about 40 miles south of Tatoosh Island, a second crew lead by **Stephani Zador,** assisted by **Dan Nelson,** pioneered a Common Murre restoration project at Point Grenville. They collected information on all aspects of breeding and predator pressure. The first two years of the study will help determine whether the colony is suitable for enhancement through the placement of decoys. Stephani is starting her PhD at UW in the fall. They thank **Chris Thompson, Kevin Ryan, Ulrich Wilson, Sally Butts,** and the Quinalt Nation for invaluable assistance, advice, and cooperation.

A third contingent kept tabs on the colony at Yaquina Head, Oregon. **Colin French** returned for a second year in a row, assisted by **Erin Hagen,** to collect information on the phenology, breeding, provisioning, and eagle predation pressure. Attendance and reproductive success remained unchanged from the previous year, despite more frequent visits from bald eagles.

COASST (Coastal Observation and Seabird Survey Team), under the direction of **Todd Hass** and **Julia Parrish,** expanded greatly throughout the Pacific Northwest this year. Their book, *Beached Birds: A COASST Field Guide* was published and distributed to volunteers in January. [Editor's note: see book review in this issue of *Pacific Seabirds.*] Soon thereafter, the same field guide served as a recruiting tool; COASST has now trained over 80 volunteers who monitor 45 beaches throughout the Pacific Northwest for seabird carcasses. For more information about COASST activities, check out its website and annual report at http://depts.washington.edu/coasst/, or later this year at www. coasst.org.

WASHINGTON—MARBLED MURRELETS

Mike Davison, Ruth Milner, Tom Cyra and **Russ Canniff** participated in surveys to detect Marbled Murrelet nesting in old growth forests in northern Puget Sound, focusing on a review of Forest Practices Applications for the possible impact of logging on known Marbled Murrelet nesting areas. The biologists also commented on environmental impact statements when there could be impact to marine habitat.

Martin Raphael, Diane Evans Mack, and **Randall Wilk** of the US Forest Service Pacific Northwest Research Station in Olympia, WA, continued several collaborative studies on Marbled Murrelets in Puget Sound and Hood Canal during 2001. Along with researchers elsewhere in Washington, Oregon, and northern California, they completed the second year of long-term population monitoring of Marbled Murrelets under the Northwest Forest Plan (NFP). They surveyed Recovery Zone 1, including the San Juan Islands to Olympia in Puget Sound and the Strait of Juan de Fuca. They also continued to collect baseline data on within-season and annual changes in distributions, densities, and productivity indices of murrelets in the San Juan Island archipelago and Hood Canal.

With **John Marzluff** of the University of Washington, Martin Raphael continued development of models that will relate predicted murrelet occupancy (probability of nesting) and risk of predation (nesting success) to habitat features at the stand and landscape scales.

Diane Evans Mack and **Martin Raphael** collaborated with the SFU/CWS murrelet research crew to investigate the social behavior of murrelets in Desolation Sound, BC (see Canada report).

In collaboration with **Brian Cooper** of ABR, Inc, we conducted a fourth year of radar sampling at 10 large drainages around the Olympic Peninsula to correlate murrelet numbers with the distribution and landscape configuration of nesting habitat defined at a broad scale.

Work continues on developing a map of potential murrelet nesting habitat for the Olympic Peninsula, Western Washington Cascades, and Western Washington Lowlands as part of the collaborative mapping effort under the NFP. This habitat map will be derived from a region-wide vegetation map being developed by the Forest Service and Bureau of Land Management in support of monitoring efforts throughout the Pacific Northwest. In a parallel modeling effort in western Washington, we began ground-based vegetation sampling in "occupied" and "absence" sites, which were identified from previous surveys under PSG's Inland Survey Protocol across multiple land ownerships. This was a regional effort in collaboration with **Sherri Miller** and **Jim Baldwin** of the Forest Service's Pacific Southwest Research Station, **Kim Nelson** of Oregon State University, and **Tim Max** of the Forest Service's Pacific Northwest Research Station, with the cooperation of the Washington Department of Natural Resources (WDNR), National Park Service, Rayonier Timber Lands, and WDFW.

Peter Harrison, Steve Crow and **Scott Horton** of WDNR organized and managed the sixth year of inland Marbled Murrelet surveys on state forest lands on the Olympic Peninsula of Washington. This one-time inventory of suitable murrelet habitat is an important part of the overall conservation strategy agreed upon in the WDNR Habitat Conservation Plan. Surveys in 2001 covered 17,773 acres, which comprised 345 survey sites. In contrast to previous work, these surveys were

mostly in second-growth forests. Subcanopy behavior was observed at 40 sites (11%), compared to about 50% occupancy observed in old-growth forests surveys between 1996 and 2000. Since 1996 this project has conducted 6,439 visits to complete 2-year PSG protocol surveys at 941 sites (49,356 acres). Hamer Environmental and Turnstone Environmental conducted this year's work. At this time we estimate that there are about 12,000 acres left to survey in this project. Detailed reports are available by contacting **Peter Harrison**, DNR–Olympic Region, 411 Tillicum Lane, Forks, WA 98331; (360) 374-2886, peter.harrison@wadnr.gov. Marbled Murrelet surveys were also carried out on trust lands managed by the Washington Department of Natural Resources in support of their ongoing Habitat Conservation Plan process. **Matt Gostin** of Turnstone Environmental Consultants led the work. During 2001, a total of 903 surveys were performed in 205 sites without detections. 10 surveys yielded detections of Marbled Murrelets, three sites had occupied behavior, and four sites had presence detections.

Shelley Hall and **Annie Farris** conducted the first year of inland Marbled Murrelet surveys at San Juan National Historic Park on San Juan Island, WA. All suitable habitat within the park is being surveyed to collect baseline information for management uses. Only one detection was recorded. Surveys are planned again in 2002.

At Olympic National Park, inland Marbled Murrelet surveys were conducted at the Heart of the Hills Campground in a cooperative effort with WDNR. 2001 was the fifth consecutive year of surveys at this high-use site. Over the past 3 years, surveys have been conducted once each week between 1 April and 15 September for better documentation of use outside the protocol survey period.

OREGON

Kim Nelson of the Oregon Cooperative Fish and Wildlife Research Unit at Oregon State University (OSU) is continuing her research on modeling Marbled Murrelet habitat associations. With the assistance of **Mandy Wilson, Ross Hubbard, Karen Cradler, Stephen Williamson, Nat Davis, Arjen Hoekstra, Patrick Lieske,** and **Megan Balter**, detailed vegetation data were collected at murrelet occupied and unoccupied sites throughout Oregon for the modeling efforts. This project is part of a three state effort (Washington, Oregon, and California) under Effectiveness Monitoring for the Northwest Forest Plan. In other projects on murrelets for OSU, dawn surveys were conducted in Oregon State Parks along the coast to determine if any were occupied; details of murrelet status were needed for proposed park improvements. In addition, dawn surveys were conducted on private and public lands for proposed mitigation of the *New Carissa* oil spill. All murrelet surveys were conducted with the assistance of Mandy Wilson, Ross Hubbard, Karen Cradler, **Jim Rogers**, and **Will Wright**.

Brian Cooper and **Kimberly Augenfeld** of ABR, Inc. collaborated with **Mike Wilson** (Oregon Department of Forestry) on a pilot study to determine whether radar could be used to monitor Marbled Murrelets and to help validate a habitat model in the Elliott State Forest.

The interagency Caspian Tern Working Group continued its attempt to move the Caspian Tern colony, the largest of its kind in the world, from Rice Island to East Sand Island in the Columbia River estuary. The Caspian Tern Working Group includes the National Marine Fisheries Service, the US Fish and Wildlife Service, the US Army Corps of Engineers, the Oregon Department of Fish and Wildlife, the Washington Department of Fish and Wildlife, and the Columbia River Inter-Tribal Fish Commission. The relocation of the tern colony to East Sand Island, which is 13 miles closer to the ocean, is intended to reduce the terns' reliance on juvenile salmonids as a food source. The strategy was prompted by estimates that the tern colony consumed about 11% of all Columbia Basin salmonid smolts that reached the estuary. Last year, a preliminary injunction requested by National Audubon, Seattle Audubon, American Bird Conservancy, and Defenders of Wildlife prevented the Corps of Engineers from harassing terns and collecting up to 300 of their eggs on Rice Island. In spite of this, 94% of breeding terns in the estuary nested on East Sand Island. The diet of terns there consisted of 47% juvenile salmonids, compared to 90% salmonids on Rice Island. Productivity was lower at both colonies in 2000 compared to 1999, but the nesting success on East Sand Island remained high compared to nesting success at Rice Island.

The effort to relocate the Caspian Tern colony is being monitored by a research team comprised of personnel from US Geological Survey–Biological Research Division, OSU, Columbia River Inter-Tribal Fish Commission (CRITFC), and Real Time Research Consultants (RTR). The team is also studying Double-crested Cormorants nesting in the estuary and Caspian Terns nesting at colonies farther upriver, as part of a larger study of avian predation on juvenile salmonids in the lower Columbia River. This year's research team included **Dan Roby, Ken Collis, Rob Suryan, Don Lyons, Michelle Antolos, Scott Anderson, Cindy Anderson, Anne Mary Myers, Bobby Begay**, and a number of seasonal technicians and volunteers. In addition, **Sadie Wright** studied the behavior of endangered California Brown Pelicans, which roost in large numbers on East Sand Island, in order to gather information on potential disturbance to pelicans from research and other human activities there.

The preliminary injunction remained in place during the 2001 nesting season, so no harassment of terns or collecting of tern eggs was allowed on Rice Island. Nevertheless, all Caspian terns that nested in the Columbia River estuary in 2001 nested on East

Sand Island, using bare sand habitat that was prepared for them prior to their arrival in early April. Nesting success on East Sand Island was very high this year, higher than has been recorded previously at a colony in the Pacific Northwest. Juvenile salmonids comprised 33% of the diet of terns nesting at East Sand Island, the lowest proportion of salmonids so far recorded for Caspian Terns nesting in the lower Columbia River or estuary. Anchovies were the most prevalent prey type among the non-salmonid portion of tern diets, and the large influx of anchovies in the Columbia River estuary this season was also apparently responsible for high nesting success among cormorants and gulls. The high forage fish availability near East Sand Island this season was also reflected in comparatively short foraging trips and high chick meal delivery rates by nesting terns. The number of Caspian Terns nesting at the East Sand Island colony remained approximately stable this year (ca. 9,000 pairs), and it is still the largest known colony of Caspian Terns in the world.

The only other Caspian Tern colony along the coast of the Pacific Northwest in 2000 was at the ASARCO superfund site on the shores on Commencement Bay in Tacoma, Washington. ASARCO, with assistance from the Washington Department of Fish and Wildlife, hazed the terns that gathered this year at the site and prevented any from nesting there in 2001. In an attempt to partially mitigate for the loss of tern nesting habitat at the ASARCO site, **Dan Roby, Ken Collis, Don Lyons**, and others from the OSU/CRITFC/RTR research team joined **Chris Thompson** and **Michelle Tirhi** from Washington Department of Fish and Wildlife and attempted to attract Caspian Terns to nest on a small barge. The barge was covered with sand and anchored in Commencement Bay about 4 miles from the ASARCO site. Tern decoys and audio playback systems were also placed on the barge. Within a month, Caspian terns began nesting on the barge and soon occupied all the available nesting habitat on it. Unfortunately, the local Puyallup Tribe insisted that the tern barge be removed immediately because of concern that its terns were harming salmon smolts raised in tribal hatcheries. On May 31, 975 tern eggs were collected from the barge and the barge was towed out of Commencement Bay. About 388 tern nests had been initiated on the barge, at an unprecedented density of 1.5 nests/m^2. Nesting by Caspian Terns was not confirmed at any other site in Commencement Bay or south Puget Sound in 2001. Clearly, nesting habitat for Caspian Terns is severely limited in the Commencement Bay area.

In early August, Judge Rothstein of the US District Court in Seattle ruled in favor of the plaintiffs and ordered a permanent injunction against any further management of tern habitat in the Columbia River estuary until the federal agencies prepare an Environmental Impact Statement. An EIS can not be prepared in time for the 2002 breeding season, so the habitat at the current colony site on East Sand Island cannot be maintained and restored, as it has been prior to the last three breeding seasons. It remains to be seen where Caspian Terns will nest in the 2002 breeding season, and whether there will be sufficient suitable habitat to meet their needs for nest sites.

Craig Strong of Crescent Coastal Research has contracted with the US Fish and Wildlife Service to help prepare the Oregon Seabird Colony Catalog for publication. Under the coordination efforts of **Maura Naughton** (USFWS, Division of Migratory Birds and Habitat Programs), Craig has completed data entry and will soon begin to create GIS layers for graphical representation in both printed and on-line versions of the catalog.

David Pitkin and **Roy Lowe** (USFWS, Oregon Coast National Wildlife Refuge Complex) conducted the annual aerial photographic surveys of all Common Murre and Brandt's Cormorant colonies and most Double-crested Cormorant colonies along the Oregon coast. For the third consecutive year, good upwelling and high ocean productivity coast wide resulted in what appeared to be good colony attendance for Common Murres and Brandt's Cormorants on the south coast. Schools of bait fish appeared to be abundant on the entire coast, in at least the nearshore zone. Although favorable foraging conditions also existed along the north Oregon coast, predation by bald eagles at many of the larger murre colonies on the north coast continues to limit murre productivity in this area, and some colonies have now been abandoned for several years. No murres attempted to breed this year on Gull Rock, which was estimated to support over 23,000 Common Murres in the late 1980's. Many of these displaced breeders appear to be attempting to nest a few miles farther south on Colony Rock at Yaquina Head, resulting in record murre densities on Colony Rock this year.

For the 15th consecutive year a beached bird mortality study was conducted on 7.1 km of beach located between Seal Rock and Alsea Bay in Lincoln County, Oregon. Seabird mortality appeared to be very low this year, probably because of abundant schools of bait fish observed throughout late spring and summer. Beginning in June 2001, increased staffing allowed the study to be conducted year-round, rather than June through September as in the past.

Monitoring of Pelagic Cormorant nesting attempts at 17 colonies near Newport continued this year. Pelagic Cormorant nests at these colonies numbered slightly below the 13-year mean. **Jan Hodder** and students in her marine birds and mammals class at the University of Oregon's Institute of Marine Biology monitored Pelagic Cormorant nesting sites south of Coos Bay and reported nesting success just below the 29-year mean.

In September, **David Pitkin** and **Ray Bentley** (USFWS) conducted a coast wide aerial survey of California Brown Pelicans from southern Oregon to Point Grenville, Washington. **Ulrich Wilson** (USFWS) conducted a boat-

based survey for Brown Pelicans from Point Grenville north along the Washington coast.

NORTHERN CALIFORNIA

Summarized by Kyra L. Mills

MURRELETS

Steve Singer and **Bryan Mori** of the Santa Cruz Mountains Murrelet Group completed their fourth year of a multi-year study in collaboration with **Tom Hamer** and **Melanie Spies** of Hamer Environmental. These researchers are using modified marine radar to prepare a population index of Marbled Murrelets in the Gazos Creek Watershed in the Santa Cruz Mountains. These radar surveys have confirmed murrelet use of nearby canyons not previously known to support nesting murrelets.

Rick Golightly, Percy Hebert (Humboldt State University [HSU]) and **Dennis Orthmeyer** (US Geological Survey [USGS]) completed the first year of Marbled Murrelet telemetry research focused on studying the effects of human disturbance on murrelet breeding, as well as gathering information on breeding sites and at-sea distribution. Cooperation and support was provided by **Howard Sakai** (Redwood National Park), **Lynn Roberts** (U.S. Fish and Wildlife Service [USFWS]), **Esther Burkett** (CDFG), Bureau of Land Management, California Department of Transportation, and California Department of Parks and Recreation.

Ben Becker is close to completing his PhD dissertation at UC Berkeley, studying diet and marine habitat selection of Marbled Murrelets in central California. He has taken a job as a marine ecologist and research director at Point Reyes National Seashore. In addition, Becker has continued monitoring Marbled Murrelets in central California, in collaboration with **Steve Beissinger** and **Zach Peery** (both from UC Berkeley).

C. John Ralph, Sherri Miller, and **Linda Long** from the Bird Monitoring Laboratory of Redwood Science Laboratory, USDA Forest Service (RSL) completed their 13th year of offshore seabird surveys. One goal is to test new sampling designs to monitor population size of Marbled Murrelets in northern California, Oregon, and Washington. They also completed their 15th year of forest surveys for Marbled Murrelets in collaboration with **Gary Falxa** (USFWS, Arcata) and **Craig Strong** (Crescent Coastal Research). In addition, they collected plumage and age data for murrelets as part of their 9th year of productivity data collection, and vegetation plot measurements for a new, cooperative project to help model and map murrelet forest habitats. The data will be used to develop a new forest habitat model for the Marbled Murrelet for monitoring the amount and location of potential nesting habitat in the Northwest Forest Plan area.

Ron LeValley and **Heather Brown** (Mad River Biologists), in association with **Howard Sakai** and **Neil Youngblood** from Redwood National Park, completed their second year of documenting and describing Marbled Murrelet activity levels in residual redwood stands at Lost Man Creek in the national park. **Ron LeValley, Kim Nelson** (Oregon State University), **Luke George** (HSU), with support from Redwood National and State Parks, Simpson Timber Company, and the Pacific Lumber Company, are conducting intensive multiple-observer surveys to determine number and activity levels of murrelets in defined strands. A second goal is to measure numbers and activity levels of murrelets and corvids, especially Steller's Jays, in campgrounds and control sites to assess the possible effect of increased corvid levels associated with campground activity on murrelet nesting activity. **Ron LeValley** is also working with the Bureau of Land Management to conduct a literature search and summary of management issues regarding avian and marine mammal use of offshore rocks included in the California Coastal National Monument.

Laird Henkel completed his fieldwork for his MS thesis at Moss Landing Marine Laboratory, on abundance and distribution of nearshore marine birds in Monterey Bay. He has also kept busy monitoring nesting Snowy Plovers and Least Terns at Ocean Dunes State Vehicular Recreation Area for PRBO, and conducting fall surveys of Marbled Murrelets off Año Nuevo. He has accepted a position with H.T. Harvey & Associates beginning this fall in Watsonville, CA. While conducting other research, **Josh Adams, Laird Henkel** and **Hannah Nevins** recorded a Long-billed Murrelet in Monterey Bay and another one at Año Nuevo. These are the southernmost Pacific coast sightings for this species.

FARALLON ISLANDS

Bart McDermott and **Joelle Buffa** (SFBNWRC), in collaboration with **Kyra Mills, William Sydeman,** and **Pete Warzybok** (all from Point Reyes Bird Observatory [PRBO]), with funding from the *Apex Houston* Trustee Council, are studying the recolonization of a deep soil area by Cassin's Auklets after boardwalk construction on Southeast Farallon Island (SEFI), Farallon National Wildlife Refuge. Approximately 800 linear feet of boardwalk made from a recycled plastic installed in fall 2000 to protect Cassin's habitat from human foot traffic. This boardwalk was designed with gaps between the boards to allow access by Cassin's Auklets. Fifty burrows were counted in the "area of boardwalk influence" in the first

breeding season (2001) following construction. Recolonization will be monitored for at least four more years, and nesting density will be compared to pre-established index plots. In addition, **Bart McDermott** (SFBNWRC), in collaboration with **Adam Brown, Kyra Mills, Peter Pyle, Pete Warzybok** (all from PRBO), are conducting a study on the annual population cycles of the non-native house mouse on SEFI. There is concern that non-native mice may be having indirect negative effects on two declining seabirds, Cassin's Auklets and Ashy Storm-petrels, by enticing migratory owls (primarily burrowing owls and barn owls) to overwinter on SEFI. When the mouse population crashes in response to low food availability, the owls turn to these small seabirds as a food source. The Refuge is considering a house mouse eradication project, and this collection of baseline data, including monthly trapping on established transects and analysis of owl pellets, are the first steps in planning such a project.

PRBO staff, including **William Sydeman, Kyra Mills, Pete Warzybok, Adam Brown, Natalia Collier, Peter Pyle, Christine Abraham, Nadav Nur** and **Jerry Nusbaum**, continued their long-term monitoring of 12 species of seabirds and 5 species of pinnipeds on the Farallon Islands National Wildlife Refuge, completing its 32nd year. Research on this Refuge is in collaboration with U.S. Fish and Wildlife Service, and **Joelle Buffa**, Refuge Manager, SFBNWRC. Research on the Farallones focuses on the effects of climate change and variability on population dynamics, demography and feeding ecology of these marine species.

Nadav Nur and **William Sydeman**, both from PRBO, are co-authors on a statistical analysis of Common Murre correction factors, based on PRBO's Farallon database. The analysis considered variation among sites, among years, and within a season and will be used for recommendations for future monitoring programs. This analysis was done with support from the *Apex Houston* Trustee Council.

NORTHERN CALIFORNIA COAST

Hannah Nevins (Moss Landing Marine Laboratory [MLML]) continues her Master's thesis research under **Jim Harvey** (MLML) and is investigating the diet, demography and diving behavior of Common Murres in Monterey Bay. The diet and demographic studies have been conducted on a sample of murres that were collected by the California halibut set net observer program of the National Marine Fisheries Service (NMFS) in 1999-2000. Daily activity patterns, diving behavior and hematology are being investigated using radio-telemetry and in cooperation with **Scott Newman** (University of California [UC] Davis, Wildlife Health Center).

Darrell Whitworth, Harry Carter, Richard Young, and **Michelle Hester** (HSU and USGS) also conducted preliminary surveys for Ashy Storm-Petrels at Point Reyes National Seashore, in cooperation with **Sarah Allen** (National Park Service).

Mike Parker (San Francisco Bay National Wildlife Refuge Complex [SFBNWRC]), **Harry Carter** (HSU), **Steve Kress** (National Audubon Society) and **Rick Golightly** (HSU), with field assistance from **Hugh Knechtel, Marty Murphy, Christine Hamilton, Nathan Jones, Brian Acord**, and **Christine Caurant** (all from HSU and SFBNWRC), completed their sixth field season of the collaborative Common Murre Restoration Project (CMRP). The recolonization of Devil's Slide Rock continued to be successful, with 110 pairs of breeding murres, representing an increase of 12 pairs from 2000. In addition, recolonization work continued at San Pedro Rock with murres visiting the social attraction equipment almost daily during the second half of the season. The CMRP continued to monitor murres at Point Reyes Headland and Castle/Hurricane Colony Complex (CHCC). Reproductive success at CHCC remains low compared to other nearshore central California murre colonies due to both natural and anthropogenic disturbances. Restoration and monitoring work will continue in 2002.

Mark Rauzon of Marine Endeavors just completed design specifications for artificial nesting platforms for Double-crested Cormorants for the new San Francisco Bay Bridge. The platforms will be built during construction as environmental mitigation. Rauzon conducted a biological inventory of Ta'u, American Samoa National Park; details are in the Pacific Rim report. Rauzon's book, *Isles of Refuge—the Wildlife and History of the Northwestern Hawaiian Islands*, was published in 2001. [Editor's note: see book review in this issue of *Pacific Seabirds*.]

Benjamin Saenz, Julie Thayer, William Sydeman (all from PRBO), and **Daphne Hatch** (Golden Gate National Recreation Area) continued their studies of seabirds on Alcatraz Island. Since 1996 they have been conducting baseline monitoring, including population size, productivity, breeding chronology, and disturbance monitoring of five seabird species on Alcatraz, including Brandt's and Pelagic Cormorants, Western Gulls, Pigeon Guillemots, and Black Oystercatchers. Alcatraz has only recently been colonized by Brandt's Cormorants, and this colony is unique because it is located in an estuarine environment, bringing breeding birds in close contact with humans. This species is normally pe-

agic and sensitive to human disturbance, yet this colony continues to grow, reaching over 375 pairs in 2001. With the goal of determining how a pelagic species exists and reproduces in San Francisco Bay, in 2001 a pilot study was carried out using radio telemetry to determine the foraging patterns of Alcatraz-breeding Brandt's Cormorants. Although plagued by technical difficulties, results showed that almost all radio-tagged cormorants were foraging within the Bay while provisioning chicks.

Sue Macias and **Janet Hanson** of San Francisco Bay Bird Observatory (SFBBO) conducted the 20th year of monitoring the south bay's waterbird colonies, with the help of many volunteers. **Clyde Morris**, SFBNWR Refuge Manager, is collaborator on this project. These researchers also began a contaminant study with **Steve Schwarzbach** and **Terry Adelsbach** of USFWS Contaminants branch. Study species include Forster's and Caspian Terns, California Gulls, Black Skimmers, and Double-crested Cormorants. This was the second year they have found Double-crested Cormorants breeding in the middle of a California Gull colony.

Jan Roletto, Joe Mortenson and **Leslie Grella**, from the Gulf of the Farallones National Marine Sanctuary and the Farallones Marine Sanctuary Association, continued to conduct shoreline surveys for live and dead marine birds and mammals, through their Beach Watch program. Of the 86 designated beach segments (total of 241 km) between Bodega Head, Sonoma County and Año Nuevo State Reserve, San Mateo County, 33 beach segments were monitored every four weeks and 19 beach segments were monitored every two weeks. A total of 4,793 beached birds were found (1.138/km) and Common Murres were most frequently reported (n= 1,332 murres, 0.316/km). For the second year in a row, beached bird and mammal encounter rates for the entire series of observations decreased slightly from the mean encounter rates for previous years for nearly all of the species observed.

OTHER STUDIES

Daniel Anderson (UC Davis) is working with **Paul Kelly** (California Department of Fish and Game [CDFG]) to evaluate the effects of mercury and other pollutants, in combination with other environmental stressors, on Western and Clark's Grebes at Clear Lake, Eagle Lake and Tulelake. Ten years of population data indicate that the studied subpopulations are regionally related in productivity and reproductive effort. Also, increased reproductive effort resulted in proportionately greater reproductive success at a given site. Additionally, Anderson and Kelly are working with CDFG to help establish grebe conservation programs at various lakes in the state. The goal is to enhance local breeding populations to help mitigate for oiling while the birds are on the coast in winter. Population studies of Brown Pelicans and other seabirds also continued in the Gulf of California.

Breck Tyler, with assistance from **Jeff Davis, Laird Henkel**, and **Brad Keitt** (all from the UC Santa Cruz [UCSC]), are conducting twice-monthly aerial surveys of marine birds and mammals in California continental shelf waters, under contract with CDFG and the National Fish and Wildlife Foundation. The surveys are designed to collect baseline distribution and abundance data and maintain rapid response capabilities for oil spills in coastal waters. During the past year, surveys have been conducted primarily in Monterey Bay and along the infrequently visited Big Sur coast.

David Hyrenbach divides his time between PRBO and Duke Marine Laboratory (DML) and is involved in several different studies. In 2001 Hyrenbach collaborated with **David Anderson** (Wake Forest University), **Cheryl Baduini** (Claremont College), **Larry Crowder** (DML), **George Hunt** (UC Irvine), **Ken Morgan** (Canadian Wildlife Service), **Rob Suryan** (Oregon State University), **William Sydeman** (PRBO), **Dick Veit** (College of Staten Island), and **Kent Wohl** (USFWS). These studies involved continuing projects for maintaining long-term data series of seabird abundance off the West Coast (Morgan, Sydeman, Veit), working to publish analyses of short-tailed albatross distribution and abundance in the southeastern Bering Sea (see Alaska Report), and undertaking analyses of consumption of marine resources by albatrosses using satellite telemetry information (Anderson). New projects for 2001 included criteria for the design of Marine Protected Areas off the west coast of North America (Morgan, Sydeman), ecological effects of longline fisheries bycatch (Crowder), and short-tailed albatross telemetry (Anderson, Suryan, Wohl).

Meredith Elliott, from PRBO, completed another field season studying the endangered California Least Terns on Alameda, formerly the Naval Air Station, and a proposed National Wildlife Refuge. This study involves cooperation from **Chris Bandy** (USFWS), **Tim Burr** (US Navy), **Margaret Kolar** (SFBNWRC), and **William Sydeman** (PRBO). The focus of this study is on the reproductive success and diet of the tern colony, as well as monitoring predator species and activities.

Julie Thayer, William Sydeman (both from PRBO), with collaboration from **Gary Strachan** (California State Parks Bay Area District) are studying the long-term demographics of six species on Año Nuevo Island. Details are in the Mexico report.

David Ainley and **Larry Spear** (H.T. Harvey & Associates), in cooperation with **Cynthia Tynan** (NMFS), **Jack Barth** (OSU), **Bill Peterson** (NMFS) and **Ric Brodeur** (NMFS), are continuing their study on the life of juvenile salmon by tracking predators, competitors, and prey. They are also studying the occurrence patterns of seabirds as affected by ocean processes that concentrate prey, such as upwelling fronts. In addition, Ainley and Spear are studying long-term changes in the central California seabird community composition, mainly from Bodega Bay to Point Pinos and out 100 nautical miles. Collaborators include **Steve Ralston** and others from NMFS, **Mike McGowan** (San Francisco State University), **Sarah Allen** (NPS, Point Reyes), **Hannah Nevins** and **Carol Keiper** (MLML).

Frank Gress, Department of Wildlife, Fish and Conservation Biology, UC Davis and California Institute of Environmental Studies, continued his studies of Brown Pelican breeding biology in the Southern California Bight, examining factors affecting reproductive success. Frank continued monitoring of Brown Pelican breeding success on Anacapa Island for the *American Trader* Trustee Council and did studies for developing aerial photographic techniques to census breeding Brown Pelicans and Double-crested Cormorants in the Southern California Bight (with **Nora Rojek**, CDFG). Other research involved the continued monitoring of Double-crested, Brandt's and Pelagic Cormorants on Anacapa Island, and along with HSU and USGS, continued monitoring of Xantus's Murrelets on Anacapa Island for the *American Trader* Trustee Council.

Michelle Hester has been working with H.T. Harvey & Associates on Adelie Penguin population studies in the Antarctic with **David Ainley**. When not in the Antarctic, **Michelle** spent time in the Caribbean, helping EPIC (Environmental Protection in the Caribbean) founders **Natalia Collier** and **Adam Brown** with conservation of Caribbean Brown Pelicans, shorebird monitoring and seabird colony in the Lesser Antilles. In addition, Michelle has been working as coordinator of the California Current System Marine Bird Conservation Plan. This adaptive conservation plan was developed by PRBO (William Sydeman, **Ellie Cohen**, and **Gregg Elliott**); it is to be implemented in partnership with government agencies and researchers from southern British Columbia to Baja California.

Scott Schaffer (UCSC) is collaborating with **Daniel Costa** (UCSC) and **Henri Weimerskirch** (CNRS, France) in conducting a study on energy expenditure and foraging ecology of the Eastern Yellow-nosed Albatross at Entrecasteaux on Amsterdam Island in the southwestern Indian Ocean.

David Ainley and **Larry Spear** (H.T. Harvey & Associates) and numerous cooperators have been working on Ross Island and Adelie Land in the southern hemisphere. Details are in the Pacific Rim report. Ainley also is working with several cooperators on Black-legged Kittiwakes in Prince William Sound; see the Alaska report.

SOUTHERN CALIFORNIA

Summarized by **Pat Mock**

Pat Baird (California State University, Long Beach [CSULB]) has completed Phase 2 of her DNA analysis of Least Terns, having looked at California, Missouri River and Mississippi River Least Terns. Pat helped **Jeff Spendelow** with his Roseate Tern and Common Tern work at Faulkland Island this summer. He has a great colony with lots of good information. She enjoyed being a worker and not in charge of the whole thing for once! Pat visited **Bill Bourne** in Scotland on 8 and 9 September. She writes, "He's still going strong and writing up old research of his (some of it 50 years old!—So there's hope!). He is always an inspiration. And—for those of you too young to remember the 1970's, he helped found PSG."

Lisa Dobson Snyder is completing her work on species diversity in "natural" wetlands versus constructed wetlands, with special emphasis on shorebird density and diversity as bioindicators of the health of the system and **Dan Robinette** is completing his work on comparative foraging and feeding ecology of four species of terns in Southern California under the supervision of Pat Baird.

Dan Robinette is currently finishing his Master's thesis, entitled "Partitioning of food resources by four sympatric species of terns breeding in southern California," under the direction of Pat Baird. Research includes investigation of diet and stable isotope analysis on Caspian, Elegant, Forster's and Least Terns breeding at the Bolsa Chica ecological reserve during the 1999 and 2000 breeding seasons. Data were also collected at other California Least Tern colonies, including those at the Tijuana Estuary, San Diego Bay, Mission Bay, Camp Pendleton, Huntington Beach, and Ormond Beach.

Dan Robinette, **Adam Brown, Natalia Collier**, and **Bill Sydeman**

Point Reyes Bird Observatory PRBO], Marine Science Division) are wrapping up their third year of an anticipated long-term research program at Vandenberg Air Force Base (VAFB), California. Species of interest include Pigeon Guillemots, Brandt's and Pelagic Cormorants, California Least Terns, Black Oystercatchers, Western Gulls, Rhinoceros Auklets, and Ashy Storm-petrels. Research includes data collection on population dynamics, breeding biology, foraging habits, and diet. Perhaps the most significant result is the discovery of a possible Ashy Storm-Petrel breeding population at VAFB. Ashy Storm-Petrels were captured during nighttime visits in both 2000 and 2001. Rhinoceros Auklets are seen frequently in the inshore waters of VAFB during the breeding season, but their breeding activity has yet to be confirmed. PRBO also is involved in a year-round study of roost site utilization by Brown Pelicans at VAFB.

Research in the eastern tropical Pacific has taken much time and effort for **Lisa Ballance** and **Robert Pitman**. They completed the third of a series of three research cruises last December and are currently analyzing data for ecosystem studies of that region. Details can be found at http://swfsc.nmfs.noaa.gov/mmd/star/default.htm. Lisa and Bob are also studying seabird distribution and abundance in the Exclusive Economic Zone (EEZ) waters of California, Oregon, and Washington. Lisa is doing energetic studies of Adelie Penguin foraging ecology on Ross Island, in collaboration with **David Ainley**, and Bob is working on killer whales in the Bering Sea and Antarctica. Future plans include ecosystem studies (including seabirds!) in EEZ waters of Hawaii, and they hope to do a cetacean and seabird survey in the Maldives and Chagos archipelagoes. For more, see http://swfsc.nmfs.noaa.gov/mmd/ecology/ecology.html.

Brian Collins reports that personnel from the San Diego National Wildlife Refuge Complex and ornithologist **Robert Patton** monitored seabird colonies on refuge lands in south San Diego Bay and the Tijuana Estuary in Imperial Beach, CA. They monitored species that are federally listed as threatened or endangered, included the California Least Tern and Western Snowy Plover, at Sweetwater Marsh National Wildlife Refuge (NWR), South San Diego Bay NWR, and Tijuana Slough NWR. Refuge staff and volunteers also monitored the California Least Tern colony at Seal Beach NWR. Other species nested on salt pond levees within the South San Diego Bay NWR, including Caspian Terns, Elegant Terns, Royal Terns, Forster's Terns, Gull-billed Terns and Black Skimmers. Data were collected on numbers of pairs, productivity, and estimated impacts of predation. A small number of Gull-billed Terns were successfully marked using patagial tags in an attempt to gain insight into their foraging activities. This was done because the small colony of Gull-billed Terns at south San Diego Bay has come into conflict in recent years with management efforts for the California Least Tern and Western Snowy Plover, by preying on young of both species at nesting sites around the bay. For information regarding this work, contact Brian Collins.

Kathy Keane has been engaged in seabird monitoring at the Port of Los Angeles and reports over 450 Least Tern nests, 160 Caspian Tern nests and several hundred Elegant Tern nests in 2001. Reproductive success was high for Caspian Terns, but low for Elegant Terns due to disturbance by a Peregrine Falcon, which resulted in nest abandonment. Success was low to moderate for Least Terns because distribution and abundance of their prey was limited; this may have been related to red tides. Kathy has also been doing Least Tern foraging studies to assess potential impacts of harbor dredging at Oceanside Harbor and Port of Los Angeles 2001. Her findings show that the majority of foraging is in the nearshore ocean. She participated in a working group to develop a rational approach to Least Tern predator management, with consideration for the conservation of other declining species.

Kathy Keane wrote the bird section for the Bolsa Chica Restoration Project EIR/EIS of USFWS and the California State Lands Commission. This document has been released for public review and the project is to begin in the near future. She also is working on a literature review on all tern species and other fish-eating birds in southern California for USFWS through CSULB, to be completed in December 2001.

Nora Rojek took a new position this summer as the Seabird Biologist for the Marine Region of the California Department of Fish and Game (DFG). This is a new position for the Marine Region. She is primarily involved in analyzing seabird and fisheries interactions and providing seabird information for fisheries management decisions and plans. She is working with other DFG biologists, **Esther Burkett, Marilyn Fluharty**, and **Paul Kelly** on developing plans to reduce disturbance to nesting seabirds, particularly Brown Pelicans, Ashy Storm-petrels, and Xantus's Murrelets, in the Channel Islands. She is also investigating hook and line entanglement of Brown Pelicans by recreational fishermen. In August and September of this year, significantly more pelicans than normal were entangled in fishing lines at the Santa Cruz Wharf. Bird rescue groups

rescued approximately 170 pelicans from the Santa Cruz area. PSG members may want to be aware that due to the enactment of the Marine Life Management Act, the DFG is currently preparing several Fisheries Management Plans. PSG may want to review drafts of the plans and the impacts that various fisheries may have on seabirds. [Editor's note: see the Conservation Report for PSG's review of one of these plans.]

Judith Hand is still writing fiction. Her first published novel came out this year in February, entitled *Voice of the Goddess*. It is played out against the background of a remarkable Bronze Age civilization, the Minoans, where women were apparently powerful and influential and the society appears to have avoided the curse of warfare. PSG members who have read Judith's book give it positive reviews.

Pat Mock is doing a wide variety of biological consulting, mostly related to conservation planning in southern California and project assessment work. He recently completed a project near the Salton Sea Refuge that included extensive surveys of waterbird use of the study area. He is peer-reviewing the report on waterbird studies that were conducted for the proposed expansion of San Francisco International Airport in South San Francisco Bay. He continues to serve as Southern California Representative for PSG.

In 2001, U.S. Geological Survey (USGS)–Western Ecological Research Center and Humboldt State University (HSU) continued several seabird studies in Southern California. **Gerry McChesney, John Mason,** and **Bill McIver** conducted the third year of aerial at-sea surveys for all seabird species, and they surveyed roosts and colonies of cormorants and pelicans throughout the Southern California. **Josh Adams** did the third year of Cassin's Auklet telemetry studies, focusing on foraging ecology at the Prince Island and Scorpion Rock colonies. **Phil Capitolo** monitored Brown Pelican roosts at Mugu Lagoon and bight roost surveys, and Bill McIver surveyed Ashy Storm-Petrels at Santa Cruz Island. Much cooperation was provided by the US Minerals Management Service (**Mark Pierson, Mike McCrary**) US Navy (**Steve Schwartz, Tom Keeney**), DFG (Paul Kelly, Esther Burkett, **John Suchil, Jeff Veal,** and **Wayne Burnett**), and Moss Landing Marine Laboratories (**Jim Harvey**).

The second year of Xantus's Murrelet monitoring using radar and at-sea spotlight surveys at Anacapa and Santa Barbara islands was conducted for the American Trader Trustee Council. Cooperators included USGS/HSU (**Darrell Whitworth, Harry Carter,** and **Richard Young**), Hamer Environmental (**Tom Hamer,** and **Melanie Spies**), California Institute of Environmental Studies (**Frank Gress**), and Channel Islands National Marine Sanctuary (**Sarah Fangman**). A Xantus's Murrelet population re-survey at Santa Barbara Island and nest monitoring were conducted by USGS/HSU (Carter, Whitworth, and Young), Channel Islands National Park (**Paige Martin**), DFG (**Eileen Creel** and Esther Burkett), and Point Reyes Bird Observatory (**Bill Sydeman**). Harry Carter, **Rick Golightly** (HSU), **Dennis Orthmeyer,** and **John Takekawa** (USGS-WERC) were principal investigators for all USGS/HSU 2001 work above.

NON-PACIFIC UNITED STATES

Summarized by **Malcolm C. Coulter**

Betty Anne Schreiber (National Museum of Natural History) has just finished her 19th year of field work on Johnston Atoll (central Pacific); details are in the Pacific Rim report. In August 2001 her book (co-edited with **J. Burger**), *Biology of Marine Birds*, was published by CRC Press. It is a 700 page summary of what we know about seabirds.

At the University of Wyoming, **Jim Lovvorn**'s students continue to investigate various aspects of the ecology and energetics of diving ducks. **Kammie Kruse** has completed her Master's degree on the nesting ecology of Canvasbacks at Ruby Lake, Nevada, and their subsequent distributions during migration and winter in the U.S. and Mexico. From the 1970s to the 1990s, the winter distributions of Ruby Lake Canvasbacks have shifted out of San Francisco Bay and the Imperial Valley to the Central Valley of California. In the high desert of north-central Nevada, nesting chronology and success over the last 30 years was closely related to patterns of El Niño and the North Pacific Oscillation. **Tory Poulton** has finished her Master's degree on the foraging behavior of scaup in San Pablo Bay (northern San Francisco Bay) relative to spatial and seasonal patterns of benthic prey. Lesser Scaup and most Greater Scaup ate almost exclusively the exotic clam *Potamocorbula amurensis*, which invaded the Bay in the late 1980s, while eating almost no *Macoma balthica*, the most common native clam. For use in modeling scaup foraging energetics in the Bay, Master's student **Samantha Richman** has recently completed dive-tank studies of Lesser Scaup to determine their intake rates of benthic prey of different sizes, densities, and depths in the sediment. Sam will complete similar studies on captive White-winged Scoters in summer 2002. For

Ph.D., **Paul Kaseloo** is measuring v use of heat from digestion and rcising muscles by Lesser Scaup cts their costs of diving in water of erent depth and temperature. These jects on scaup and Canvasbacks are t of a larger study of how their vements and foraging energetics ct their contaminant burdens in rthern San Francisco Bay, with ra-otelemetry by **John Takekawa** and san **Wainwright De La Cruz** and ntaminant analyses by **Keith Miles**, from USGS Biological Resources ivision. In summer 2001, **Robin orcoran** began her Master's research the nesting ecology of Lesser Scaup the Yukon Flats in northeastern laska.

Lovvorn's lab also continues work n Spectacled Eiders and the oceanog-phy of their habitats at their wintering ea south of St. Lawrence Island in the ering Sea. Details are in the Alaska eport.

Stewart Fefer (USFWS, Gulf of Maine Coastal Program) Protection and estoration of identified important nest-ng habitats of seabirds in the Gulf of Maine is one our focuses. We have been involved in development of col-aborations amongst Federal and State gencies and statewide and local orga-nizations focused on conservation of important nesting islands. Efforts in-clude protection of 38 islands through fee or easement acquisition, and active restoration of Roseate Terns, Atlantic Puffin and other species on ten pro-tected islands. We maintain and update the seabird nesting island database, which is used by organizations for pro-tection strategies. We assist in con-ducting seasonal aerial coastal water-bird surveys throughout coastal Maine (more than 3000 miles) and maintain and analyze the database to focus con-servation efforts. We also protect and restore coastal wetlands through part-nerships. Our wetland focus includes acquisition of coastal wetlands and upland buffers and restoring hydrology to salt marshes and coastal rivers, thus providing more habitat for native fish and waterbirds. We have leveraged more than $68 million of habitat pro-tection and restoration funding from a variety of sources for these efforts. See our web site for more information at http://gulfofmaine.fws.gov.

PACIFIC RIM

Summarized by **Beth Flint**

HAWAIIAN ISLANDS

Monitoring of seabird populations in the Hawaiian Islands continued in 2001. **Beth Flint** and **Cindy Rehkemper** of the Pacific Remote Is-lands National Wildlife Refuge Com-plex and **Tony Palermo** of Tern Island coordinated efforts. However, the dedi-cated biological technicians and volun-teers in the field carried the enormous workload. **Nancy Hoffman** of Midway Atoll National Wildlife Refuge and Wayne Sentman of the Oceanic Society led efforts at Midway. Nancy Hoffman and **Peter Pyle** presented results of al-batross population monitoring at Mid-way at the meeting of the Society for Conservation Biology in Hilo, Hawaii in late July of 2001.

In July 2001 **Melanie Steinkamp** convened a Workshop on Island Sea-bird and Waterbird Monitoring for managers and biologists working in the tropical Pacific. Biologists responsible for most of the seabird populations in the US Pacific Islands worked with scientists from the Biological Re-sources Division of the US Geological Survey to refine, improve, and stan-dardize methods in tropical systems and to improve sampling, accuracy, and precision in monitoring. This workshop is part of **Maura Naugh-ton's** larger project of Regional Seabird Conservation Planning for the US Pa-cific Islands.

In an effort to improve their procel-lariid monitoring capabilities, the United States Fish and Wildlife Serv-ice (USFWS) Pacific Islands Fish and Wildlife Office purchased an ornitho-logical radar unit to monitor shearwa-ters and petrels in the Hawaiian Is-lands. **Colleen Henson** coordinated training in the use of the equipment for both State and Federal biologists and monitoring studies are now underway. USFWS and the State of Hawaii also contracted with **Brian Cooper** and **Bob Day** of ABR, Inc. to survey the distribution and abundance of Newell's Shearwater and Hawaiian Dark-rumped Petrel on the islands of Kauai, Maui, and Hawaii during summer 2001. On Kauai in June they found a 60% decline in Newell's Shearwaters since 1993. Bob Day, with **Reggie David** of Kailua-Kona, also conducted a small study of shearwater movements near a proposed power line intertie on Kauai in June and October. The study was funded by Kauai Electric. In October, Bob Day conducted a radar- and visual-based study of movements of shearwa-ters and petrels near a proposed US Coast Guard tower near Pahoa, on the island of Hawaii. This work was done with **Rich Blaha** of ABR's Oregon office.

Tom Telfer (Department of Land and Natural Resources, Division of Forestry and Wildlife, State of Hawaii [DOFAW]) reports that the results of the 2000 "Save our Shearwater" pro-gram on Kauai continued the sharp decline in Newell's Shearwaters ob-served in the annual recovery effort since Hurricane Iniki in 1992. Overall, 23% fewer birds were recovered this year than in the previous year. Totals of 467 Newell's Shearwaters and 8 Dark-rumped Petrels were recorded as having fallen on Kauai, during the 2000 fallout season; 91% of the rescued birds were successfully returned to the wild. **Tom Telfer** (DOFAW) began experimental trials with marine radar this summer to identify the locations of yet-unknown Newell's Shearwater nest-ing colonies, so that habitat protection and predator control measures can be applied (when these have been devel-oped). Two new colony locations were identified. Marine radar also was tried as a means to measure the relative size of nesting colonies, so that the effec-tiveness of future predator control ac-tions can be measured. A prototype of a time-operated remote tape recorder sys-tem was constructed to locate addi-tional nesting colonies in areas outside the range of radar. The plan is to con-struct several of these, and to insert and recover them in typical habitat by means of helicopter. Recordings will be used to identify areas of concentrated Newell's Shearwaters vocalizations,

thereby indicating likely nesting colonies.

This summer, two Newell's Shearwaters nestlings were reared by adult pairs nesting in artificial burrows, which were first constructed in 1999 at Kilauea Point NWR. These nests were the long-term result of a cross-fostering experiment conducted by **G. V. Byrd, J. L. Sincock,** and **T. C. Telfer** between 1978 and 1980, whereby 90 Newell's Shearwaters eggs were transplanted into Wedge-tailed Shearwater nests at Kilauea Point NWR. This is the first year that more than one Newell's Shearwater fledgling was known to be produced at the cross-fostering site, and the fifth year in a row that successful nesting has been documented there.

Dave Boynton and **Ken Wood** confirmed a nesting colony of Band-rumped Storm-Petrels in the Pohakuao area of the Na Pali Coast, northeast of Kalalau Valley at approximately 1,400 feet elevation. They confirmed it by recording the birds' vocalizations with a parabolic microphone loaned by **Tom Telfer**. They could not get to the nests because the terrain was too steep, but they know the general location from observation of flying birds. Confirmation with night vision scopes is planned, but it may be too late this year to accomplish that.

Since January 2001, **Kathy Cousins** has worked for the Western Pacific Regional Fishery Management Council as their Protected Species Coordinator. She is preparing the Council's framework amendment to the Pelagic Fishery Management Plan, which will contain measures to reduce the incidental capture of seabirds. The Council has invited USFWS to present guidelines to handling the Short-tailed Albatross at its 111th meeting. With **Cindy Knapman**, Kathy assisted **Karla Gore** of the NMFS Pacific Islands Area Office with their Protected Species Workshops for Hawaii longline fishers. The workshop covered current issues, regulations, and handling guidelines. The Council hopes to work with the NMFS and US Coast Guard to translate the workshop materials for fishers in other Pacific island areas. In the upcoming Council meetings, Kathy will present materials on how vessels can avoid introductions of invasive species to island ecosystems. The Council is working with USFWS to develop a seabird handling tool kit. The Council has offered to sponsor the Second International Fishers Forum in Honolulu, Hawaii, to convene in late 2002. Like the November 2000 forum in New Zealand, this will be a venue for biologists and fishery managers to exchange information and explore methods to reduce seabird incidental catch by longline vessels. In May 2001, the Council members broadened the forum to include presentations and discussions on reducing the incidental capture of sea turtles.

USFWS completed a biological opinion for the National Marine Fisheries Service (NMFS) in November 2000 on the effects of the Hawaiian longline fishery on the endangered Short-tailed Albatross. USFWS estimated that continued operation of this longline fishery will result in an incidental take of 2.2 Short-tailed Albatross per year. The Service, NMFS, the International Bird Rescue and Rehabilitation Center (IBRRC), veterinarians, and seabird experts developed guidelines for handling, treatment, and release of any Short-tailed Albatross caught in the fishery. These guidelines were presented to the fisherman at several Protected Species Workshops held in August through October of 2001.

Colleen Henson coordinated the North Pacific Albatross Working Group during 2001. This group will meet again prior to the Annual Meeting of the PSG in Santa Barbara. All people interested in furthering science in the interests of albatross conservation in the North Pacific are encouraged to contact Colleen for more details.

In May 2001, **Linda Elliot**, regional representative of IBRRC, and her colleagues presented a two-day comprehensive hands-on course in Oiled Wildlife First Responder Training. Nearly 40 wildlife agency biologists in Hawai'i learned response techniques for birds, sea turtles and marine mammals. This training added to the experience gained at the HAZWOPER Oiled Wildlife Response course and drill organized by the USFWS earlier this year for over a dozen of the same biologists. Both events were actively facilitated by the industry cooperative, the Clean Islands Council (CIC).

Hawaii's oiled wildlife response capabilities were significantly enhanced during the recent *Ehime Maru* recovery operation by the US Navy, Pacific Fleet. IBRRC under contract for develop oiled wildlife planning and procedural capabilities for this operation, provide technical advice and assistance during critical stages, and to provide first response and rehabilitation in the unlikely event of oiled wildlife. This work was a great opportunity to update the state's preparedness. Elliott developed the oiled wildlife response plan and reference document for the Environmental Unit of the *Ehime Maru* operation, and these documents can also be used to update the area plan. Supplies were brought up to date, with the assistance of the state wildlife agency and CIC, and charts and forms were updated, with inclusion of specific information for Hawai'i and Pacific wildlife. CIC developed and built a Stabilization Unit for this operation, which has further enhanced our first response capabilities, and IBRRC is providing assistance to set up this unit for the current operation. IBRRC's activities on the Galápagos are described in "Elsewhere in the Pacific," below.

At Midway Atoll National Wildlife Refuge, **Keith Larson** and the staff and volunteers have been very busy cleaning numerous oiled Laysan Albatrosses that have appeared frequently in the colonies. They are making good use of the water heating and conditioning unit deployed there.

Anthony Viggiano submitted his Masters of Science thesis, "Investigating demographic and life history characteristics of the Black-footed Albatross," to the University of Washington College of Forest Resources. He did his field investigations at Tern Island in French Frigate Shoals, part of the Hawaiian Islands National Wildlife Refuge, and was supervised by **John Marzluff**. Also working Tern Island, **Allison Veit** continued fieldwork for her graduate studies with **Ian Jones** at Memorial University in Newfoundland.

her study is entitled "Sexual Selection, Tail Streamer Function, and Demography of Red-tailed Tropicbirds."

Aaron Hebshi (University of Hawaii) is in his second field season of studies on the relationship between Wedge-tailed Shearwater reproduction and skipjack tuna abundance. This year he studied colonies on Oahu, Kauai, and Kaho'olawe in order to gauge the spatial variability of chick growth. In addition he quantified the dependence of shearwaters and other Hawaiian seabirds on skipjack tuna by counting birds while aboard a tuna boat. He placed patagial wing tags on a trial sample of shearwaters at Kilauea Point National Wildlife Refuge, Kauai, to identify the birds out at sea and get an idea of their foraging range.

ELSEWHERE IN THE PACIFIC

The International Bird Rescue and Rehabilitation Center in Hawaa'i responded to the *Jessica* oil spill in the Galápagos Islands in January of this year. Fortunately there was a small wildlife impact, but data are still being collected on impacts to the marine habitat.

Sandy Bartle of the Museum of New Zealand has been fully involved with relocating and re-housing the bird collection (70,000 specimens) over the last two years. Excellent new facilities are now available for accessing and researching the museum's world-class collection of albatrosses, petrels, and other seabirds. More than half the collection information, including fresh measurements, has now been entered in a database, and it is hoped that this resource may eventually be available on our website. Some progress has also been made in analyzing population and breeding data from the Westland Petrel field study from 1970 to 1993. A team involving **Jean-Claude Stahl** is analyzing and modeling foraging and fisheries interactions in Buller's Albatross, based on satellite tracking of birds from several different age and sex classes. Meanwhile, census work by **Alan Tennyson** has shown that the population of Snares Crested Penguins is not declining, unlike that of several other New Zealand penguin species. He is continuing his main project on extinctions and on the subfossil bird fauna of Pitt Island, Chatham Islands. Several new species of seabirds and other fauna remain to be described.

Harry Carter, Rick Golightly, and **Emilie Craig** of Humboldt State University and **Frank Gress** of the California Institute of Environmental Studies, Davis, traveled to the Cook Islands in August 2001 to conduct preliminary studies of seabirds there. They surveyed Red-tailed Tropicbirds and Brown Boobies, recorded the first recent nesting of the Masked Booby(!) at Takutea, and live-trapped Polynesian rats at Takutea and Atiu. Many Bristle-thighed Curlews (>60) were noted. Work was conducted in cooperation with the Cook Islands Natural Heritage Project (**Gerald McCormack**); much help was received from the Atiu Island Council, **Roger Malcolm** (Atiu Motel), and Atiu Tours (**James Marshall**).

Donna O'Daniel and **Lindsey Hayes** continued their work at Johnston Atoll during this past year. They monitored populations of boobies (Masked, Red-footed, and Brown), Great Frigatebirds, White Terns, and Black Noddies. Nesting populations of the Red-tailed Tropicbirds, Great Frigatebirds, and all three booby species continued to increase. Great Frigatebirds that were wing-tagged at French Frigate Shoals in the northwestern Hawaiian Islands continued to be sighted on North and Sand islands. Most of the 500-600 nesting pairs of Gray-backed Terns moved their nesting location from North Island to Sand Island (where they had not nested since the early 1980's), possibly due to encroachment on their nesting habitat by 80,000+ nesting pairs of Sooty Terns. A long-distance traveler was recorded: a Brown Booby banded as a chick at Johnston Atoll on 13 April 2000 was found in the Tokelau Islands on 10 December 2000. In May 2001, **Donna Dittmann** visited Johnston Atoll from Louisiana State University to obtain salvaged bird specimens for inclusion in their Museum of Natural Sciences collection.

Betty Anne Schreiber (US National Museum of Natural History) has just finished her 19th year of field work on Johnston Atoll, studying the breeding biology of pelecaniform species. Last year the military completed destruction of all the chemical weapons on the island, and they are now closing down all operations there. Schreiber documented that the weapons destruction process had no effect on the birds nesting there (see the *Journal of Wildlife Management* for October 2001). In an attempt to solve at least some of the mysteries of seabird energetics, Schreiber put satellite transmitters on nesting Red-footed Boobies in 2000 and on Brown Boobies in 2001 to determine where they feed.

In February **Dominique Horvath** and **Lee Ann Woodward** surveyed seabird species composition, distribution and numbers at Howland, Baker, Jarvis, Kingman Reef, and Palmyra Atoll National Wildlife Refuges during a research cruise aboard the National Oceanographic and Atmospehric Administration's ship *Townsend Cromwell*. They deployed a solar-powered sound generation system to play the calls of Phoenix Petrels at Jarvis Island, hoping to attract birds to found a colony there. **Chris Depkin** has been stationed at Palmyra Atoll National Wildlife Refuge as a wildlife biologist since August 2001. He has been assisting and documenting a project to eradicate the black rat on the atoll. The project, by The Nature Conservancy and US Department of Agriculture Wildlife Services, is led by **Jim Murphy.**

Mark Rauzon (Marine Endeavors, Oakland, CA) conducted a biological inventory of Ta'u, American Samoa National Park, in collaboration with **David Duffy** and **Holly Friefeld** (USFWS, Honolulu). This 3000 foot volcanic peak has nesting Tahiti Petrels and is also the place where Herald's Petrels were last seen in 1988 by PRBO biologists. Norway rats were found at the summit, as were Spotless Cranes, which had not been seen in Ta'u since 1986 in lowland environments. Wake Island cat eradication has

been placed on hold due to missile launches and security concerns.

David Ainley and **Larry Spear** (H.T. Harvey & Associates), with help from **Grant Ballard, Nadav Nur, Michelle Hester, Sophie Webb** (Point Reyes Bird Observatory), **Peter Wilson, Kerry Barton** (Landcare Research, New Zealand), **Mike Beigel** (Beigel Technology), **Nat Polish** (Daedelus Corporation), **Josh Adams, Hannah Nevins** (Moss Landing Marine Laboratory) have been studying Adelie Penguins at Ross Island, South Pacific. Their focus is on intercolony dynamics within an isolated cluster of colonies and the reasons for different colony growth rates and age structure.

David Ainley (H.T. Harvey & Associates), along with **Greg Rau** (University of California at Santa Cruz, Livermore National Laboratory), **Keith Hobson** (Canadian Wildlife Service), **Paul Augustinus** (Victoria University, Auckland) studied the Snow Petrel on the Adelie Land Coast (South Pacific/Indian Ocean). Their research involved isotope analysis of laminated deposits of mumijo ('fossilized" barf) dating to 19,000 YBP.

SOUTH-EAST ASIA

Summarized by **Beth Flint**

Neil Aldrin D. Mallari, Director of Communications and Network Development Program for the Haribon Foundation for the Conservation of Natural Resources in Quezon City, Philippines, will soon finish a status report on threatened birds and key conservation areas in the Philippines. They just published their new book, *Key Conservation Sites in the Philippines*. For a preview, please refer to their website at http://www.haribon.org.ph, and have a look at their interactive map!

Akinori Takahashi is doing postdoctoral research with the British Antarctic Survey at Signy Island Research Station, Antarctica, studying Adelie and chinstrap penguins during the austral summers of 2001-02 and 2002-03. The objective of the study is to examine the link between foraging strategy and reproductive success of Adelie penguins, and to compare the foraging ecology of Adelie and chinstrap penguins breeding on the same island, using micro data loggers developed by National Institute of Polar Research, Japan.

Korean seabird news was summarized for Pacific Seabirds by **Lee Kung Gyu** of the Korea Institute of Ornithology, whom we were happy to meet at the PSG meeting on Kauai. He is in transition between leaving his position as a bird researcher with the Ministry of Environment and embarking on doctoral study abroad. He is in the process of finishing two papers on the breeding density and feeding patterns of Streaked Shearwaters (*Calonectris leucomelas*). At the 2001 Spring Korea Ornithology Symposium on 27-28 April 2001 at Kyungpook University, Professor **Lee Dyu-Pyo** (Department of Biology, Honam University; dplee@honam.honam.ac.kr) presented a paper about the breeding density of Swinhoe's Storm Petrel on three inhabited islands. **Kim Hyun-Tae, Cho Sam-Rae, Ki, Jung-Hoon** and **Kang Hee-Young** presented a paper about some observations on the shape of Herring Gulls. Kim Hyun-Tae is a Busuk high school teacher; e-mail pintail@soback.kornet.net; homepage (a very good site): http://soback.kornet21.net/~pintail/. At the 2001 Korea Association of Biological Science Symposium, 26-27 October 2001, Jungang University, **Jang Jung-Yoon** and **Park Shi-Ryong** (professor Park Shi-Ryong, Department of Biological education, Korea National University of Education; e-mail srpark@cc.knue.ac.kr) presented a poster about foraging behavior and spatial distribution of the Black-tailed Gull (*Larus crassirostris*) in captivity. **Dr. Hong Soon-Bok** (Department of Biology, Kyungsung University; birdhsb@netian.com) has been studying the breeding ecology of the Little Tern. He has published a good paper on this species: Hong, S. B., Woo, Y. T., and Higashi, S. Effects of clutch size and egg laying order on the breeding success in the Little Tern (*Sterna albifrons*) on the Nakdong Estuary, Republic of Korea. Ibis 140: 408-414, 1998). **Kwan Young-Su** (doctoral course in the Department of Biology, Kyunghee University; auk1005@hanmail.net) is studying the breeding ecology of Black-tailed Gull on Hong Islet. **Jung, Hun** (doctoral course in the Department of Biology, Kyunghee University; larus@netsgo.com) has been studying the calls and behavior of the Black-tailed Gull. **Nam Ki-Baig** (master's course in the Department of Biology, Kyunghee University; ibis02@hanmail.net) is studying the breeding ecology of Streaked Shearwater on Sasudo Island.

The Ministry of Environment of the Korean government surveyed inhabited islands in Korea from 1998 to 2002. About 2,700 inhabited islands are located in Korea. Among these islands, 100-150 islands were surveyed each year, including topography, vegetation, land animals, marine invertebrates, and seaweed.

Useful home pages for keeping up with seabird science and conservation in Korea are provided by The Korea Association of Biological Science (www.kadas.or.kr) and The Ornithological Society of Korea (www.koreabird.or.kr).

MEXICO

Summarized by **Beth Flint**

Enriqueta Velarde has been working with seabirds in the Gulf of California since1979. Most of her work has concentrated on Isla Rasa with Heermann's Gull and Elegant Tern. However, she has also done pelagic censuses for several years, as well as seabird nesting islands in almost the whole Gulf. Her work has concentrated on the breeding and feeding ecology of the previously mentioned species and trying to find a relationship of these parameters to fisheries. Her studies include a banding program; she has banded approximately 40,000 Heermann's Gull chicks and 8,000 Elegant Tern chicks to look at migration and longevity. In addition, banded individuals have been providing informa-

tion on breeding effort and success with age, nesting philopatry, mate fidelity, etc. Results show that these birds feed mostly on commercially important small pelagic fish. Some of their breeding and feeding parameters, together with some oceanographic parameters, allow them to predict the fisheries with a year in advance and a high degree of certainty (catch per unit effort and total catch). Velarde's work on the island also involves guiding and controlling visitors so as to prevent disturbance of the nesting colonies. Tourist companies such as Lindblad Expeditions and Baja Expeditions have been key to the ongoing program on the island, due to their direct and indirect support and donations. Many other conservation organizations and private donors have supported us through the years, although we are always in need of further support.

Julie Thayer, William Sydeman (both from Point Reyes Bird Observatory), with collaboration from **Gary Strachan** (California State Parks Bay Area District) are studying the long-term demographics of six species on Año Nuevo Island. Species include Rhinoceros Auklets, Cassin's Auklets, Brandt's and Pelagic Cormorants, Pigeon Guillemots and Black Oystercatchers. Particular focus is on Rhinoceros Auklet reproductive and foraging ecology. In 2001, juvenile rockfish (and lingcod) formed the largest proportion of Año Nuevo seabird diets since the study began in 1993. This was a change from the anchovy-dominated diets in the past years. These diet observations were reflected in the higher reproductive success for the early alcid breeders, but mixed results for later breeders after rockfish dropped out of diets in early July.

TREASURER'S REPORT FOR 2001

Breck Tyler

This report summarizes PSG finances for fiscal year 2000-2001, which ended 30 September 2001. It includes a balance sheet for all active accounts of the Pacific Seabird Group, a cash flow summary for the past fiscal year, and a brief discussion of finances and membership. The report was submitted on 19 November 2001.

Assets, equity, and liabilities

On September 30, 2001, the total assets in PSG accounts were $125,652.93 (Table 1). Total equity was $118,339.17, a decrease of $28,891.24 during the past fiscal year. Liabilities were $6,850.00 for continued work on the Seabird Monitoring Database and $463.76 in unreimbursed officer expenses.

General income and expenses

Excluding funds invested in the Endowment Account, PSG generated $9,851.84 in new income during this fiscal year, 64% from membership dues and the rest from dividends, library subscriptions, and publication sales (Table 2). Excluding payments for previous liabilities and endowment account share losses, PSG accumulated $18,595,80 in new expenses (Table 2) for a net loss of $8,743.96 which was made up from PSG savings. Publication and mailing of *Pacific Seabirds* was the largest (37.5%) single expense.

Endowment Account

The PSG endowment account is comprised of shares in three Neuberger & Berman Management, Inc. funds—Focus, Guardian, and Partners. Share and account values fluctuated significantly in line with the volatile stock market. On September 30, 2001 the PSG endowment account was worth $85,407.95. Contributions during the past fiscal year were $3,483.25 in Life Membership payments. Capital gains and dividends from the account totaled $12,112.68 and were automatically reinvested. In total, we invested $15,595.93 in the account this year but lost $35,279.45 in share value; thus, the net value of the endowment account decreased by $19,683.52.

Other accounts

PSG maintains a savings account with Morgan Stanley Dean Witter and five other checking/savings accounts for specific needs. The Treasurer's joint checking/saving account is managed by Breck Tyler. The *Pacific Seabirds* account, managed by Editor Vivian Mendenhall, contains funds used in the publication and mailing of *Pacific Seabirds*. Steven Speich manages an account to deal with costs of *Marine Ornithology*. The United Kingdom membership account, managed by Mark Tasker, is used for deposits of dues paid in British pounds sterling. Ken Morgan manages an account for members paying dues in Canadian dollars.

Annual Meeting

At the 2001 Annual Meeting in Kauai, expenditures exceeded income by $446.49. A complete financial summary for the 2001 Annual Meeting was not available at the time of this report.

Membership

At the writing of this report, there were 446 active memberships in PSG—337 regular memberships (individual and family), 43 student members, 64 life members, and 2 corresponding members. A total of 49 libraries received *Pacific Seabirds*, 24 of which had paid subscriptions. The PSG goodwill and journal exchange program is currently under review.

TREASURER'S REPORT

TABLE 1. Pacific Seabird Group Balance Sheet, September 30, 2001

	Balance	
	30 Sep 2001	30 Sep 2000
ASSETS		
Annual Meeting – Napa 2000	0	$455.20
Annual meeting – Kauai 2001	$1,368.96	0
Endowment Funds (Neuberger & Berman)	$85,407.95	$105,091.47
Pacific Seabirds Account (Mendenhall)	$3,536.71	$518.24
PSG Savings Account (MSDW)	$25,864.06	$48,159.52
Treasurer's Accounts (Tyler)	$7,411.52	$7,654.93
UK Membership Account (Tasker)	$749.40	$608.91
Marine Ornithology (Speich)	$1,293.67	$1,592.14
Canada Membership Account (Morgan)	$20.66	0
Total Assets	**$125,652.93**	**$164,080.41**
LIABILITIES AND EQUITY		
Liabilities	$7,313.76	$16,850.00[2]
Equity	$118,339.17	$147,230.41[2]
Total Liabilities and Equity	**$125,652.93**	**$164,080.41**

[1]Morgan Stanley Dean Witter
[2]Revised from 1999-2000 report (Pacific Seabirds 27:90)

TREASURER'S REPORT

TABLE 2. Pacific Seabird Group cash flow report, 1 October 2000 – 30 September 2001.

GENERAL		
INCOME		
Membership dues	$6,327.07	
Interest & dividends	$1,969.48	
Monitoring program refund	$682.79	
Library subscriptions	$640.00	
Publication sales	$232.50	
Total		$9,851.84
EXPENSES		
Monitoring subcontracts paid	$10,000.00	
Pacific Seabirds	$6,981.53	
Student travel to Kauai	$5,000.00	
XAMU petition	$1,500.00	
Director's insurance	$1,208.00	
Transfer to endowment fund	$1,103.25	
Dues (TOC, ABC, IUCN)[1]	$1,077.04	
Tax preparation	$600.00	
Annual meeting - Kauai	$446.49	
Marine Ornithology	$249.50	
PSG website	$207.46	
Officer & committee	$165.96	
Bank charges	$56.57	
Total		$28,595.80
Net (income - expenses)		**- $18,743.96**
ENDOWMENT FUND		
INCOME		
Capital gains & dividends	$12,112.68	
Life membership dues	$3,483.25	
EXPENSES		
Share value loss	$35,279.45	
Net (income - expenses)		**- $19,683.52**

[1]The Ornithological Council, American Bird Conservancy, International Union for the Conservation of Nature

BOOK REVIEWS

Beached Birds. By Todd Hass and Julia K. Parrish. Wavefall Press, 121 st Avenue South, Seattle, WA 98104, USA, 2000. With assistance from the Washington Department of Fish and Wildlife and the Pacific Seabird Group. ISBN: 0-9704157-0-2. $30.00.

Reviewed by Jan Hodder

Beached Birds is a field guide to 48 species of dead birds you will encounter if you walk along the coastal beaches of Oregon and Washington. The guide was designed to be used by a citizens' science project, the Coastal Observation and Seabird Survey Team (COASST). This project involves the collection of data on the status and trends of coastal resources, mainly seabirds, by volunteers. The guide is currently in use to survey beaches on the outer coast of Washington for dead seabirds.

The guide has a comprehensive "how to use" section that makes the book easy to use. Identification of dead birds is based on choosing one of 16 unique foot types. Once you have decided on foot type, you move to the family section and make further identifications using bill shape and, if necessary, measurements of wing chord. A centimeter rule is printed along the top edge of the guide to assist with determining chord length and for other measurement noted in the text, for example distinguishing sexes. A sample species account at the beginning of the book walks you through all of the information used for identification. This is clear and well done, with the exception that it omits the drawing of bill shape that occurs in all of the real species accounts.

Each species has a two-page account, and some of the more commonly encountered species, such as the Common Murre, have two pages each for juveniles and adults. Carcass photographs, including a centimeter rule, are shown for each species, with definitive identification features pointed out and noted. The majority of the photos are helpful, with the exception of the one for small immature gulls, which in fact shows a fulmar. To further assist with identification, differences among similar species are noted. Each species account ends with a bulleted checklist of the major characteristics you should look for to correctly identify that species.

The choice of species is good, although I was surprised to find that Horned Puffins were not included, since, at least in Oregon, they are occasionally found dead in large numbers in winter. Juvenile gulls are lumped as large and small, which is probably sensible for a citizens' science group but would be frustrating for someone who wished to move beyond that wide classification.

The guide is sensibly printed on waterproof paper and spirally bound, and it will hold up well in the field. It has useful information for what to do when you find oiled, injured, or marked birds.

If you walk beaches in Oregon or Washington and want to be sure of correctly identifying the dead bird you find this would be a great book to take along on your walk. Its major value, however, is the tool it provides for participants in the COASST citizens monitoring group. As such, it serves as a model for what could be produced by those who are interested in collecting data on the abundance of dead birds in other coastal areas.

Isles of Refuge: Wildlife and History of the Northwestern Hawaiian Islands. By Mark J. Rauzon. University of Hawai'i Press, Honolulu, HI, USA, 2001. 205pp. ISBN: 0-8248-2209-9 (cloth, $49.00),; 0-8248-2330-3 (paperback, $19.95).

Reviewed by Vivian Mendenhall

Isles of Refuge is an account of the "unknown" Hawaiian islands, the chain that stretches 2,000 km northwest of Kauai. I started the book immediately after my first visit to Hawaii, including Midway Atoll, and I was hooked immediately. Mark Rauzon tells the history of the islands, their biology, and conservation issues. He also celebrates the beauty and mystery of the islands, through poetry, Native lore, and his personal experiences during more than 20 years of biological field work. Most of the photographs and art work are the author's own. The book is written for the general reader, but it is also delightful and informative to a biologist.

The northwest Hawaiian Islands emerge in this book as a place of stunning beauty and abundance. After a general introduction, Rauzon presents each island in one or more chapters, from "Fathoming the Past" (Nihoa) to "Kure Atoll—Dark Side of the Sun." Precipitous Nihoa Island is the nearest to Kauai. It was occupied by native Hawaiians in prehistoric times, but it escaped the recent guano mining and influx of exotic species that have devastated so many Pacific islands. Thus it still hosts numerous indigenous species and half a million seabirds. The next island, Necker, is nearly barren but has 60,000 seabirds and ancient religious sites. French Frigate Shoals are named after two of the Comte de la Pérouse's ships, which almost ran aground there

in 1786. The tiny Gardner Pinnacles are accorded a short chapter.

The next island is Laysan, with 2 million seabirds,including the world's largest colony of Black-footed Albatrosses. It seems a miracle that any life survived on Laysan Island after it was subjected to ruthless mining for guano phosphates, exploitation of albatrosses for feathers, and other assaults. Several colorful characters were associated with Laysan's early days, including mining overseer Max Schlemmer, who was so enamoured of the place that he lived there for almost 20 years. But Schlemmer's rabbits devastated the island's vegetation and contributed to the extinction of several indigenous birds. Lisiansky Island, named after a Russian explorer who was almost shipwrecked there, suffered a similar fate. Pearl and Hermes Reef has 7 tiny islets and the United States' only pearl bed, which was depleted by fishers within 3 years of its discovery. Midway Atoll's sparsely-vegetated main island was converted into an oasis of woods, lawns, and historic buildings during the first half of the 20th century. The US Navy base was attacked in World War II, and a major sea battle was fought nearby; it is now a historic memorial. The military base was recently converted to an ecotourism resort, where visitors can view (and help study) the island's seabirds, including the world's largest colony of Laysan Albatrosses. (Rauzon says Midway has about 1 million birds; my references say closer to 400,000 [V.M. Mendenhall 2001, Pacific Seabirds 28:2]. However, some censuses are obsolete, so no one really knows.) At the far end of the chain, Kure Atoll formerly had a U.S. Coast Guard station, but now its dense *Naupaka* thickets have been left to the frigatebirds and boobies. A wrecked freighter still looms over Kure's reef, one of numerous shipwrecks whose history Rauzon recounts.

The ecology of the islands and their seabirds are interspersed throughout the book: storm-petrels and noddies in the chapter on Nihoa, coral atolls and Sooty Terns on French Frigate Shoals, endemic species and their vulnerability on Laysan, and so on. Several chapters in the middle of the book are devoted to monk seals, sea turtles, albatrosses, and the marine ecosystem and its seabirds in general.

The beauty of the islands glows from Rauzon's photographs, to which the printer has done full justice. I only wish that some of the photos were larger. There are many historical photographs, as well as a number of Rauzon's own drawings and ethereal watercolors. The book is exellently designed; my only quibble is that there is an odd colored stripe at the lower edge of each picture, for which I can see no reason.

Throughout the book there is a poignant juxtaposition of natural splendor and its thoughtless destruction. This underscores Rauzon's eloquent plea for the protection of rare species and ecosystems. He shows us how much work is being put into restoring and defending what is left—weeding out exotic plants on Laysan over the years, eradicating introduced species, sanitizing clothes and equipment before landing on still-pristine Nihoa, monitoring populations. The entire chain has been a federal refuge since 1909 (except that Midway became a refuge in 1988, and Kure is now a state refuge). The islands and adjacent waters are now off-limits to the public (again, with the exception of Midway, since it has a resident refuge manager). But refuge status in the early days was no guarantee of protection. The government tried to prevent the outright slaughter of birds, but a number of species were lost before people understood how vulnerable they were to other threats. Some dangers, such as introduced diseases, still are beyond our remedy. The most heartbreaking story is that of the Laysan Rail. This species died out on its native island due to habitat destruction by rabbits. In the meantime, it had been transplanted from Laysan to Midway, where it flourished. But during World War II, while scientists and bureaucrats argued over re-transplanting the little bird, rats got onto Midway and it went extinct.

The islands come to life in this book in many ways, not least through Rauzon's accounts of his own adventures. Field biologists will recognize his anticipation and sense of discovery on each island, the discomforts and exhilaration of remote places, the moments of terror, the humor and zaniness. The stories will delight non-biologists, too, and offer them a real glimpse of field work. We read about the thrill of finding a new species of breeding bird and an entirely new insect, Rauzon's sense of doom at watching his radio sink out of sight on an isolated shore, a hair-raising rescue at sea using an unreliable boat, and a burly man who tried to pick a fight with Rauzon because he was wearing pink tennis shoes. The ordeals and drama of people in history also are described sympathetically.

Isles of Refuge conveys deep appreciation and respect for native Hawaiian history and beliefs. Probably only a few of the northwest islands were ever inhabited; others seem to have had Hawaiian names, but no one remembers now which islands they refer to. An unusual perspective is given by Rauzon's account of expeditions that had nothing to do with biology: a trip to Necker Island with a native Hawaiian priest to re-inter the remains of ancestors, and a voyage on the *Hokule'a*, a traditional Hawaiian sailing vessel that is navigated using wind, stars, and swells. My only preference would have been some brief mention of the contemporary life and concerns of native Hawaiian people.

Rauzon's style of writing is well suited to this subject—or perhaps I should say "styles," because precise scientific passages alternate with poetic descriptions: "[A] multihued blue realm: deep indigo seas and azure skies flared with the rag-tag flight of White Terns..." (page 20); "Wedge-tailed Shearwaters...wheeled around us, slicing the sea with their wing tips" (page 41). To avoid distracting the non-specialist reader, the text does not contain scientific names, and references are at the end of each chapter. But scientists will be glad that the end

f the book includes an appendix with atin names of all species, a full Literature Cited, and an index.

I have a few minor criticisms. The istorical accounts are invariably interesting, but sometimes the style is informal to the point that I could not figure out the sequence of events. The naps are numerous and good; however, the general map on page 1 should include the Emperor Seamounts northwest of Kure Atoll, which were promised by the caption and referred to in the text. I caught a possible technical error: on page 79, a statement concerning the procellariids says that "members of this family have unique glands in their head to remove salt from their body;" this could mean that other avian families do not have salt glands, whereas in fact a number of families possess them. Finally, the editing is disappointing. There are grammatical slips, such as "their tolerance and curiosity was touching (page 184), and a number of typographic errors, such as misspelled words ("warder" for "warden," in the caption on page 29) and misplaced hyphens (page 51). However, these are small problems that do not detract from value of the book.

Isles of Refuge is a splendid book that should appeal to all general readers and biologists who are interested in islands, seabirds, history, or adventure. It is clear that this is work of love. Mark Rauzon has worked in a world that few of us will ever see—for the islands' own protection, if not for ours. I am grateful that he has shared with us his knowledge of the northwest Hawaiian Islands and his affection for them.

INFORMATION FOR CONTRIBUTORS

Pacific Seabirds is the journal of the Pacific Seabird Group. Manuscripts and news items are welcome on any topic relating to research on Pacific seabirds or to their conservation. Short manuscripts are preferred (about 1,000 to 5,000 words for major submissions). Material should be submitted to the Editor, except as noted below: Dr. V.M. Mendenhall, 4600 Rabbit Creek Road, Anchorage, Alaska 99516; phone (907) 345-7124; Fax (907) 345-0686); e-mail fasgadair@att.net. Deadlines are 15 March for the spring issue and 15 September for the fall issue.

CONTRIBUTIONS

Contributors are invited to submit the following:

- **Articles** on original research
- **Reports** (articles on topics other than original research—e.g., seabird conservation issues)
- **Forum** (discussion of a current topic)
- **Review articles** (these may cover seabirds worldwide)
- **Conservation News** *(submit to* Craig Harrison, Associate Editor for Conservation, 4001 North 9th St., no. 1801, Arlington, VA 22203; E-mail charrison@erols.com)
- **Other short news items** relating to seabird research or conservation or the Pacific Seabird Group
- **Book reviews**
- **Letters** commenting on content of *Pacific Seabirds* or other issues. If the topic is controversial, others may be given a chance to review the letter and submit a reply. Printing and editing of letters are at the editor's discretion
- **Art work,** such as sketches of seabirds, either accompanying a text or for publication alone

PEER-REVIEW OF MANSCRIPTS

Articles, and review articles, will be submitted to two peer reviewers for technical review. Other types of manuscript can be sent for review if the author requests it or at the editor's discretion.

SUBMISSION OF MANUSCRIPTS

Material may be submitted by either regular mail or E-mail (addresses above). Materials sent by E-mail should be attached to the main message and should be in Word, WordPerfect, or Rich Text Format. However, materials less than 300 words long may be sent in the body of the E-mail. For manuscripts submitted by E-mail, all tables and figures must also be sent as hard copy via mail or Fax. If a manuscript is submitted by regular mail and will be peer-reviewed, send three copies.

For materials submitted by mail, include a computer disk. Do not send computer disks of manuscripts that will be peer-reviewed until the revised copy is submitted. Material on a disk should be in Word, WordPerfect, or Rich Text Format. The disk should include a second copy of the manuscript in Text (ASCII). Indicate whether the disk was made on a PC or a Macintosh (Macintosh is preferred).

FORMAT

Contributors should consult format used in a recent issue of *Pacific Seabirds*. If no example is available, you may request that the Editor send a copy of relevant material.

GENERAL

Manuscripts should be double-spaced with 1-inch margins. If your paper size is A4 (European), the bottom margin should be at least 1 3/4 inch (whether the manuscript is sent by regular or E-mail). Pages should be numbered, except for Tables and Figures.

Use US spelling conventions (e.g., "behavior," not "behaviour" and "criticize," not "criticise"), except when citing non-US journal articles.

Give the scientific name (*italicized*) after the first mention of any genus or species. English names of bird species are capitalized (e.g., Fork-tailed Storm-Petrel). Names of mammals, other taxa, and English names of bird groups are lowercase except for proper names (e.g., blackbirds, shield fern, Steller's sea cow).

Use the 24-hour clock with a colon (e.g., 18:30). Give dates as day-month-year. Use metric measures, except when quoting informal statements. For quantities less than 1, use an initial 0 ($P = 0.95$, not $P = .95$).

If you use an acronym, give the entity's full name the first time it is mentioned. Avoid excessive use of acronyms.

Typographical conventions follow *Scientific Style and Format*, 6th edition, by the Style Manual Committee of the Council of Biology Editors; Cambridge University Press (1999).

ORGANIZATION

Articles should contain the following sections, in this order: Title, Author(s), Authors' affiliations (including E-mail for corresponding author), Abstract, Key words, Introduction, Methods, Results, Discussion, Acknowledgments, Literature Cited, Tables, Figure legends, and Figures. **Other types of manuscript** may use a different organization (e.g., a review or report could contain sections on various locations); however, formats for Literature Cited, Tables, and Figures will still apply.

Abstract—An abstract is required for longer articles and suggested for short ones. It should contain essential information from each section of the text, without statistics. One or more additional abstract(s) may be provided in languages other than English.

Key words—Five to 10 words for use in computerized searching. Species names in both Latin and English should be included.

Introduction—Present the aims and significance of the work, and place it in the context of pre-existing information. State hypotheses that are being tested, if any.

Methods—Describe the methods, location, time, and personnel of the study. Include statistical methods, if any.

Results—Present results that are pertinent to aims given in the Introduction. Where feasible, summarize information and give the full data in Tables or Figures. Give sample sizes and the significance levels of statistical tests. Literature citations normally should not be in the Results section.

Discussion—Summarize the results briefly, then evaluate the results, and develop their importance in relation to other work. Do not include primary results and statistical tests, which belong in Results.

Literature Cited—List all references in alphabetical order of first author's surname. Surname of the first author should be listed first, followed by initials; all subsequent authors' names should be listed as Initial(s), Surname. List all authors in the Literature Cited; do not use "et al." Year of publication follows authors, then title and journal reference. Include page numbers for all cited works, including the total number of pages in a book. Use standard abbreviations for journal titles; if you are unsure, spell them out. Spell out names of agencies and institutions.

The first line of each citation should be justified to the left margin; subsequent lines may be left-justified or indented. Do not use all-capital letters or italics in the Literature Cited, except that scientific names should be in italics. Examples:

Pratt, H.D., P.L. Bruner, and D.G. Berrett. 1987. A field guide to the birds of Hawaii and the tropical Pacific. Princeton University Press, Princeton, NJ. 409 pp.

Schreiber, E.A., and R.W. Schreiber. 1988. Great Frigatebird size dimorphism on two Central Pacific atolls. Condor 90:90-99.

Verify that all items in the Literature Cited are referenced in the article, and vice versa.

For articles read by you in a language other than English, list the citation in the original language. An English translation of the title [in brackets] is optional.

Text citations should be "Surname year" (no comma). Two authors are "Surname and surname year"; 3 or more authors are "Surname et al. year" (but all authors should be given in the Literature Cited). E.g., (Pratt et al. 1987, Schreiber and Schreiber 1988).

Tables—Tables should be numbered in the order they are first mentioned in the text. Refer to each table at least once. Use horizontal lines below the main heading(s); do not use vertical lines in tables. The Table (including its heading) should be comprehensible without immediate reference to the text. Data in Tables should not be repeated in the text, except to summarize. If the manuscript is submitted by E-mail, send a hard copy of the Tables by Fax or regular mai, because table columns usually get scrambled in E-mail attachments.

Figures—Figures should be numbered in the order they are first mentioned in the text. Refer to each figure at least once. Figures should be drawn at least 50% larger than they will appear in print. Make all lettering, numbers, and symbols large enough to be read easily after they are reduced. The figure (including caption) should be comprehensible without immediate reference to the text. Define all symbols in a legend or the caption. Shading of bars should be black, white, or coarse cross-hatching. If the manuscript is submitted by E-mail, send a hard copy of figures by Fax or regular mail.

A high-quality copy of all figures must be submitted with the final version of the manuscript. Acceptable copy includes good computer printouts, original drawings, or good reproductions (Xerox prints on normal paper usually are not good enough). Graphics may be submitted as E-mail attachments in TIFF or EFS format; JPG is not recommended.

Photographs—*Pacific Seabirds* occasionally publishes photos. The best ones are very sharp and have good detail and contrast. Original glossy prints should be submitted. Digital images submitted by E-mail must be at least 250 dpi (when reduced to publication size). Most digital cameras record at 72 dpi, although some have an option of higher resolution.

Art work—Original art work is welcomed. An original or a high-quality reproduction should be sent. Pen and ink drawings reproduce the most satisfactorily.

REVISIONS AND PROOFS

Materials that are sent for peer review will be returned to the author, along with reviewers' and editorial suggestions. If the Editor has accepted the article, he or she will endeavor to revise and return the manuscript within 60 days. If the article needs major work, the author may be invited to revise and re-submit it for future acceptance.

For peer-reviewed articles, proofs will be mailed to the author before publication. Corrections should be returned within one week (E-mail reply is encouraged). Proofs of other materials will not be sent to the author unless he or she requests them.

PUBLISHED PROCEEDINGS OF SYMPOSIA OF THE PACIFIC SEABIRD GROUP

The Pacific Seabird Group holds occasional symposia at its annual meetings. Published symposia are listed below. They are available for purchase (unless out of print). To order, see the membership application/publication order form.

SHOREBIRDS IN MARINE ENVIRONMENTS. Frank A. Pitelka (Editor). Proceedings of an International Symposium of the Pacific Seabird Group. Asilomar, California, January 1977. Published June 1979 in Studies in Avian Biology, Number 2. Out of print.

TROPICAL SEABIRD BIOLOGY. Ralph W. Schreiber (Editor). Proceedings of an International Symposium of the Pacific Seabird Group, Honolulu, Hawaii, December 1982. Published February 1984 in Studies in Avian Biology, Number 8. Out of print.

MARINE BIRDS: THEIR FEEDING ECOLOGY AND COMMERCIAL FISHERIES RELATIONSHIPS. David N. Nettleship, Gerald A. Sanger, and Paul F. Springer (Editors). Proceedings of an International Symposium of the Pacific Seabird Group, Seattle, Washington, January 1982. Published 1984 as Canadian Wildlife Service, Special Publication. Out of print.

THE USE OF NATURAL VS. MAN-MODIFIED WETLANDS BY SHOREBIRDS AND WATERBIRDS. R. Michael Erwin, Malcolm C. Coulter, and Howard L. Cogswell (Editors). Proceedings of an International Symposium at the first joint meeting of the Colonial Waterbird Society and the Pacific Seabird Group, San Francisco, California, December 1985. Colonial Waterbirds 9(2), 1986. $12.00 *from* Ornithological Societies of North America, PO Box 1897, Lawrence, Kansas 66044; phone (800) 627-0629.

ECOLOGY AND BEHAVIOR OF GULLS. Judith L. Hand, William E. Southern, and Kees Vermeer (Editors). Proceedings of an International Symposium of the Colonial Waterbird Society and the Pacific Seabird Group, San Francisco, California, December 1985. Published June 1987 in Studies in Avian Biology, Number 10. $18.50.

AUKS AT SEA. Spencer G. Sealy (Editor). Proceedings of an International Symposium of the Pacific Seabird Group, Pacific Grove, California, December 1987. Published December 1990 in Studies in Avian Biology, Number 14. $16.00.

STATUS AND CONSERVATION OF THE MARBLED MURRELET IN NORTH AMERICA. Harry C. Carter, and Michael L. Morrison (Editors). Proceedings of a Symposium of the Pacific Seabird Group, Pacific Grove, California, December 1987. Published October 1992 in Proceedings of the Western Foundation of Vertebrate Zoology, Volume 5, Number 1. $20.00.

THE STATUS, ECOLOGY, AND CONSERVATION OF MARINE BIRDS OF THE NORTH PACIFIC. Kees Vermeer, Kenneth T. Briggs, Ken H. Morgan, and Douglas Siegel-Causey (editors). Proceedings of a Symposium of the Pacific Seabird Group, Canadian Wildlife Service, and the British Columbia Ministry of Environment, Lands and Parks, Victoria, British Columbia, February 1990. Published 1993 as a Canadian Wildlife Service Special Publication, Catalog Number CW66-124-1993E. *Free of charge from*: Publications Division, Canadian Wildlife Service, Ottawa, Ontario, K1A OH3, Canada.

BIOLOGY OF MARBLED MURRELETS—INLAND AND AT SEA. S. Kim Nelson and Spencer G. Sealy (Editors). Proceedings of a Symposium of the Pacific Seabird Group, Seattle, Washington, February 1993. Published 1995 in Northwestern Naturalist, Volume 76, Number 1. $12.00.

BEHAVIOUR AND ECOLOGY OF THE SEA DUCKS. Ian Goudie, Margaret R. Peterseen and Gregory J. Robertson (editors). Proceedings of the Pacific Seabird Group Symposium, Victoria, British Columbia, 8-12 November 1995. A special publication compiled by the Canadian Wildlife Service for the Pacific Seabird Group. Published 1999 as Canadian Wildlife Service Occasional Paper number 100, catalog number CW69-1/100E. *Free of charge from*: Publications Division, Canadian Wildlife Service, Ottawa, Ontario, K1A OH3, Canada.

SEABIRD BYCATCH: TRENDS, ROADBLOCKS AND SOLUTIONS. Edward F. Melvin and Julia K. Parrish (Editors). Proceedings of an International Symposium of the Pacific Seabird Group, Semi-Ah-Moo, Washington, February 1999. To be published by University of Alaska Sea Grant, Fairbanks, Alaska. In preparation.

Information on presenting symposia: Pacific Seabird Group Symposia are initiated by one or more persons with interest in a particular topic. The goal is to present a collection of papers that explore and review the chosen topic, usually at an annual meeting of the Pacific Seabird Group. In some cases the papers are then edited and published as a Symposium of the Pacific Seabird Group. Individuals interested in organizing a symposium must first contact both the Coordinator of the Publications Committee and the Scientific Program Coordinator for an annual meeting. Important guidelines will be provided for obtaining approval, organizing, presenting, and publishing Pacific Seabird Group Symposia, including the responsibilities involved. Organizers can then proceed to put the symposium session together. This opportunity is available to all members of the Pacific Seabird Group.

PACIFIC SEABIRD GROUP COMMITTEE COORDINATORS

Contact committee coordinators for information on activities of committees and how you can participate.

CONSERVATION COMMITTEE

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